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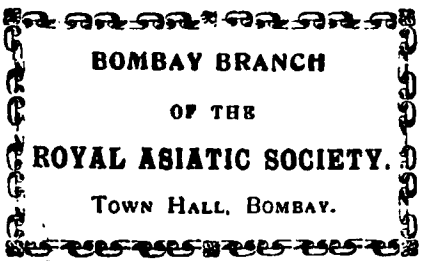

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PLATE I.
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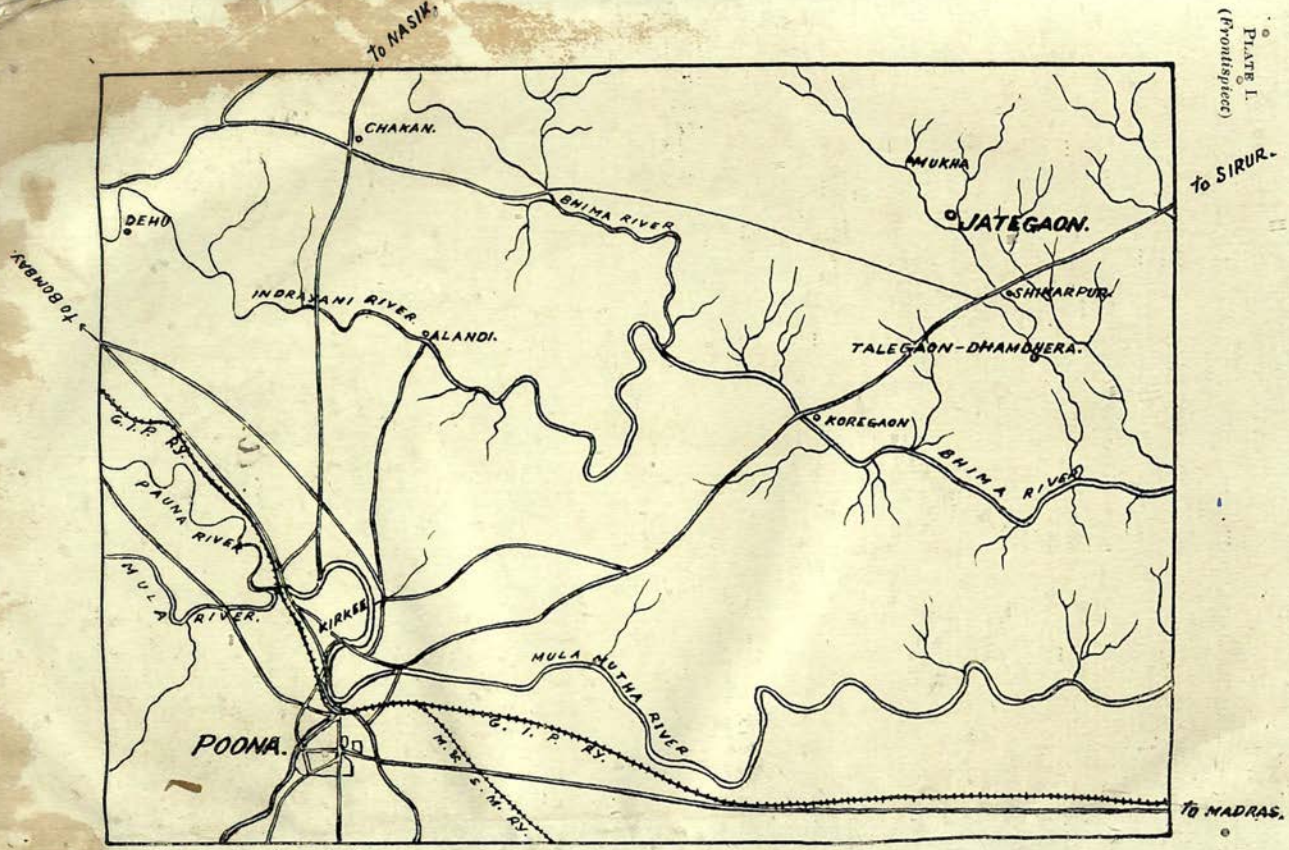

Scale 4 Miles to an inch. Position of the Village of Jategaon Budruk in relation to Poona.

UNIVERSITY OF BOMBAY
ECONOMIC SERIES, No. III.

LAND AND LABOUR
IN A
DECCAN VILLAGE

STUDY No. 2.

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BY
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K.K. a. 57

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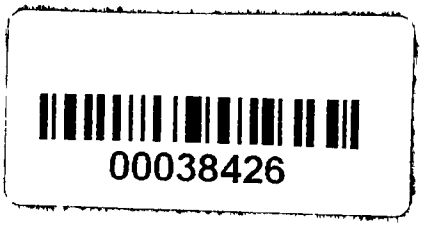

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PREFACE

THE study of rural life and of rural conditions by close inquiry into the circumstances of a single unit, be it village, parish, or estate, has come to the front prominently in recent years as a method of social and economic investigation. And by the use of this method, if the villages to be studied are well chosen, a very much more intimate acquaintance with the actual conditions of life than by any other method can be obtained. And this is certainly true in the Deccan where the villages are still the economic and social units in a sense that is far more true than is the case in most countries, and to an extent which even in India is, I think, only found in the Peninsula. The villages are perhaps now tending to be less the relatively isolated units than hitherto, but they are still so to an extent that gives the knowledge even of a single village a very special value for the study of the whole rural conditions of the country.

On this account, with the collaboration of a number of friends and assistants, I undertook some years ago the study of a single village near Poona, and the result was published in 1917 under the title of 'Land and Labour in a Deccan Village.*' This purported to give a picture of life and conditions in a 'dry' Deccan village. By a 'dry' village, I mean one where irrigation is very limited in amount and where the prosperity of the village depends almost entirely on the annual monsoon rain. That study revealed a number of unexpected facts, and the general conclusions which I drew were certainly of a far more depressing character than I had expected. Only one serious criticism has, however, been made. It is said that

*University of Bombay, Economic Series No. 1 (Oxford University Press, Bombay).

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CHAPTER I.

INTRODUCTION

THE rocky plateau, known as the Bombay Deccan, which lies to the east of the ridge of the Western Ghats has an average elevation, in the neighbourhood of Poona, of about 1800 to 2000 feet. Its general slope is a very gentle one towards the east and hence the rivers all run in this direction towards the Bay of Bengal. From west to east the character of the country tends to become less rocky, the land to be more flat and to be covered with deeper soil, and the agricultural characters, so far as soil is concerned, to be of a higher type. This is, however, only true in general, for there are spurs of the Sayhadri mountains (the so-called Western Ghats) which penetrate far to the east, and in the neighbourhood of these spurs the rocky character with very shallow soil is again found over large areas.

In our former study of a Deccan village* we selected a place lying in the western part of the area, in the tract lying almost immediately east of the ridge of the Western Ghats, and known as the *Maval*. The area which this village represents would, therefore, be expected to have a generally rocky character, and a shallow and not very heavy soil. The most characteristic feature of the *Maval* tract is its relatively assured rainfall, coming in largest quantity in June and July, but extending in fair quantity till after the end of September. The village, Pimpla Soudagar, was in fact, in the tract marked by the authorities as safe from famine, and this character—in spite of the

* H. H. Mann—Land and Labour in a Deccan Village. Bombay 1917.

rockiness of the site and the shallow character of the soil—dominates the economy of the village.

But very little to the east of the village which formed the basis of our former study, the country changes so far as climate is concerned. The total rainfall rapidly becomes different. While a few miles to the west of Poona we are in an area considered as fairly safe from famine, a few miles to the east we reach a part of the country where the uncertainty of the rain is great, and where famine is frequent. Generally speaking the soil is deeper and heavier and is considered more fertile in the latter districts, but it is possible to select a village which will reproduce the condition of the western area fairly closely in the matter of soil, and in which the effect of the change of climate can be closely studied in the character of the cultivation.

We selected the village of Jategaon Budruk for the present study because it was of this character. In the proportion of rock and rocky soil in the area it is somewhat more rocky and with shallower soil than Pimpla Soudagar. In the extent to which irrigation is carried on, it is not widely different and hence is dependent on the weather to about an equal extent. But it is twenty-five miles, by road, to the north-east of Poona, while our former study was made on a village ten miles to the west of that city. We ought hence to be able to compare the conditions prevailing in the two tracts and follow out the economic results of the change of climate.

There is, however, one other large difference which will and must complicate such an attempt to study the economic effect of the climatic conditions. This is the fact that while the former study was made of a village near a big town, influenced immediately by a large local demand for labour independent of agriculture, the village we are now to consider is far from any large municipal centre, has had until recently only a bad communication

with Poona by an unbridged road, and has been liable to be cut off from that centre by a rise in the river Bhima. This means that any large local demand for labour is excluded, and if there is an excess of workers in the village they must either continue to work on agricultural or semi-agricultural occupations in the neighbourhood, or else go away for relatively long periods to work in Bombay or some other large centre.

We have, in fact, a somewhat complicated comparison to make between the conditions in two villages, physically very similar, but in one of which there is a fair assurance of rain and the advantage (or disadvantage) of nearness to a large town and labour centre, while in the other there is greater uncertainty of rain and a purely rural environment little influenced by a local labour demand. In the latter case there is no doubt that we are face to face with conditions which prevail over very wide areas, and which are in every sense typical of enormous tracts of the Bombay Deccan.

CHAPTER II.

THE PHYSICAL FEATURES OF THE VILLAGE OF JATEGAON BUDRUK

THE village of Jategaon Budruk is situated at a distance of twenty-five miles to the north-east of Poona, as is shown by the attached map. It is on the banks of a small river, named the Vel, which is little more than a rocky torrent tributary to the Bhima. This has its origin in a spur of the Western Ghats forming a line running west to east, north of the Bhima valley. It absolutely dries up when the rainfall of the previous year is deficient and in most years the water becomes little more than a trickle during the hot weather. It completes its course and meets the Bhima about ten miles to the east of Jategaon.

The country to the north and west of our village is hilly and has very shallow soil, but the area to the east and south consists of level plains of deeper and richer soils.

The local market is at Talegaon Dhamdhere, a large village five miles away. This is somewhat important centre, and possesses a small sub-judge's court. The administrative centre to which it looks, as the headquarters of its taluka or sub-division, is Sirur, twenty-five miles away on the road to Ahmednagar. But except for the necessities of local government,—a very real thing in a tract like the Deccan where nearly every cultivator is directly responsible to Government for his land tax and the duties which the possession of land involves,—the people have more to do with Poona than with Sirur. Poona is, however, twenty-five miles away. The first two or three miles are passed by means of a track across the fields,

and cannot be called a road at all. At Shikrapur, the track joins the main Poona-Ahmednagar road, one of the most important roads in the Deccan, and one which is always kept in good condition. To reach Poona, however, this road has to cross the Bhima river, and until recently this was negotiated by a ford, almost dry for the greater part of the year, and generally passable throughout the whole except for a few days.

The area of the village (or in English parlance the parish) is 2449 acres. All is held under the ordinary *ryotwari* tenure of the Deccan, but the *inam* rights (or ownership of the land with a right to the whole or a portion of the land assessment) of 175 acres are held by private *inamdars*. There are a limited number of wells and there is a small amount of irrigation from these, but the area of this relative to that of the village is very small.

The physical conditions which determine the character of the village are the following, with which we will proceed to deal in order:—

A. The Rainfall and Climate,
B. The Geology of the Village,
C. The Soils,
D. The Drainage of the Village,
E. The Water Supply.

A. Rainfall and Climate

The rainfall at Jategaon is well shown by the rainfall table attached. This has not been, of course, recorded in the village itself but has been kept at the market town of Talegaon Dhamdhere which lies five miles to the south of the village and represents very similar conditions. A still closer idea of the rainfall in the last few years is obtained from a record kept in the village of Shikrapur, only two and a half miles away, by the Public Works

RAINFALL AT TALEGAON DHAMDHERE

	1907 Ins.	1908 Ins.	1909 Ins.	1910 Ins.	1911 Ins.	1912 Ins.	1913 Ins.	1914 Ins.	1915 Ins.	1916 Ins.	1917 Ins.	1918 Ins.	1919 Ins.	Average 1907—16 Inches
January	0·05	..	..	..	..	..	..	..	0·51	..	..	0·59	..	0·06
February	0·13	..	..	..	..	..	..	..	0·33	..	1·10	..	..	0·05
March	0·09	0·17	..	..	..	..	..	..	0·15	..	0·01	..	..	0·04
April	4·00	0·11	..	..	..	..	0·15	..	0·91	..	..	..	..	0·52
May	..	..	1·29	2·52	0·30	0·57	1·99	1·15	..	5·51	2·59	4·08	3·25	1·34
June	4·10	3·79	7·43	6·74	2·30	2·12	11·37	3·37	9·66	2·67	2·54	0·41	2·47	5·36
July	9·56	2·31	3·37	1·40	4·94	3·67	3·13	3·94	6·04	10·16	0·79	0·23	2·01	4·85
August	3·95	2·48	3·95	6·61	3·22	1·54	0·88	3·68	1·34	1·25	2·35	0·93	2·25	2·66
September	1·66	7·21	4·38	5·92	0·14	0·42	2·59	3·97	9·45	8·52	5·33	0·76	11·40	4·42
October	0·05	0·82	1·15	2·52	0·22	4·02	0·99	0·34	0·67	7·38	4·89	0·35	..	1·82
November	0·15	..	..	2·61	2·87	2·23	..	1·20	0·67	0·48	4·88	0·85	1·84	1·02
December	..	..	..	..	1·06	..	0·02	..	0·04	..	..	1·10	..	0·11
Total	23·74	16·89	21·57	28·32	15·05	14·57	21·12	17·65	29·77	35·97	24·48	9·30	28·22	22·25

Department, and placed at our disposal. The Talegaon rainfall for thirteen years is shown on the preceding page. The Shikrapur rainfall for three years from June to December is as follows:—

Rainfall at Shikrapur

	1916 inches	1917 inches	1919 inches
June	1·08	2·85	1·54
July	7·63	0·75	1·65
August	1·34	2·10	2·87
September	9·37	5·57	10·90
October	7·06	2·24	0·30
November	0·20	3·50	1·40
December	...	...	...
	26·68	17·01	18·66

The rainfall statistics are exceedingly important in studying the economy of the village and an examination of the figures given for Talegaon will indicate several points. The first of these is the extraordinary variability of the total rainfall, and also of the distribution in the year. The total rainfall varies from 9·30 inches to 36 inches. An average for figures which differ as widely as this has obviously no value, and means nothing. The frequency of particular ranges of rainfall during the last thirteen years is however as follows:—

	Numbers	Percentage
Below 15 inches	2	15%
15 to 20 inches	4	31%
20 to 25 inches	4	31%
25 to 30 inches	2	15%
Over 30 inches	1	8%

Thus there is almost an even chance in any year that the rainfall will be less than 20 inches.

The variability of the *distribution* of the rainfall is still greater. The rainiest months in the year are September, June and July, but in neither of these is the rainfall reliable, though that in June and July is on the whole far more reliable than that in September. The following indicates the frequency in the last thirteen years of particular ranges of rainfall in these months, and also in October which, as we shall see later, is also vital to the understanding of the village economy:—

	June inches	July inches	September inches	October inches
Nil to 2 inches... ...	1	3	4	9
2 to 4 inches	7	6	2	1
4 to 6 inches	1	1	3	2
6 to 8 inches	2	1	1	1
8 to 10 inches	1	1	2	—
Over 10 inches... ...	1	1	1	—

There is therefore a very great probability that more than two inches of rain will be received in both June and July. In September which is, by average, the next rainiest month to June and July in the year, and that on which the valuable *rabi* or cold weather crops largely depend, the chances are much less. If there is less than two inches of rain in September unless followed by a heavy fall in early October, it means a failure of the *rabi* crops. When therefore three crops out of thirteen fail in this manner, it is evident what a gamble dry land *rabi* cultivation in this part of the Deccan really is.

Attention should also be called to the occasional very large differences in the rainfall of places only two to three miles apart, as showing the extraordinarily local character of the late (September and October) rainfall in particular. If we place side by side for 1916 and 1917

the rainfall for the same months of the year at Talegaon and Shikrapur, this will be seen at once.

	1916		1917	
	Talegaon inches	Shikrapur inches	Talegaon inches	Shikrapur inches
June...	2·67	1·09	2·54	2·85
July	10·16	7·63	0·79	0·75
August	1·25	1·34	2·35	2·10
September ...	8·52	9·37	5·33	5·57
October	7·38	7·06	4·89	2·24

We have therefore here an example which is probably typical of the greater part if not the whole of the Deccan east of a line passing a few miles east of Poona. Here the rainfall is excessively variable in amount, so much so that the average figures usually given have little or no practical meaning; the distribution of the rain, and particularly of the late rain in September and October, is so uncertain as to make the *rabi* or cold weather crop a very great gamble,—and the rain is so local (especially again as regards the late rains) that places two or three miles from one another may stand, in respect to *rabi* crops, on a completely different basis.

The temperature of the village is that of the neighbouring parts of the Deccan. Actual observations in May, October and December 1917 during our inquiries gave the following figures:—

	Maximum temperature	Minimum temperature	Remarks
May 6th to May 21st 1917	97° F.	73° F.	
October 4th to October 13th 1917	87° F.	69·5° F.	Cloudy and rainy weather chiefly.
December 16th 1917	82° F.	65° F.	

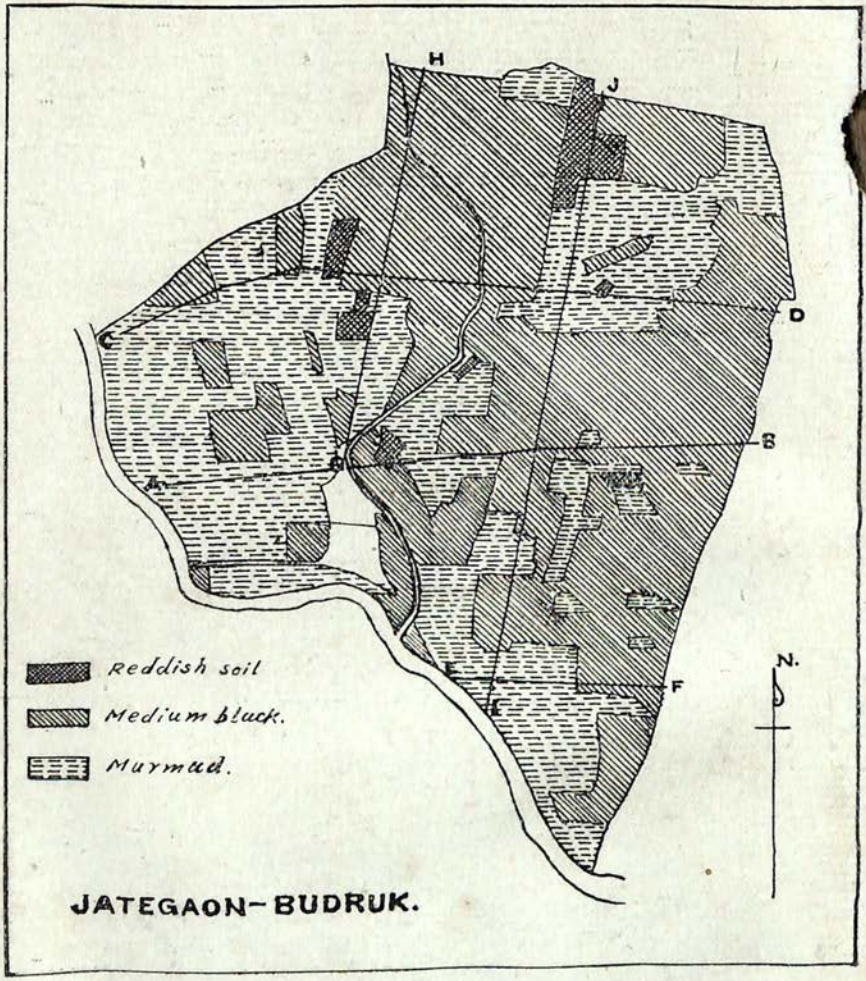
B. The Geology of the Village

The whole of the village area is situated on trap rock, of which there are three distinct varieties. In the southern half of the village, the greater part of the rock masses consist of hard concretionary trap which decomposes very slowly, and this area is therefore essentially rocky. In the northern half, on the other hand, the trap is mostly soft, highly amygdaloidal, and easily decomposed by exposure of air and water. This latter area is therefore covered with a much deeper layer of soil of some sort than the south. Along a ridge of rocks running from this village in a north-east direction there is a small area of a third variety, or red trap. This has been noticed by the people and an exposure in the bed of one of the large *nalas* has been known as far back as any one can remember as the 'red rock' (तांबं खडा). Along the Vel river the rock is chiefly of the harder concretionary type, and hence while passing this village the river hardly loses its character of a rocky torrent whose slope is however only gentle in the village area.

The village area consists of two valleys, namely that of the Vel river with steep rides, and which except above the village site, has very shallow rocky soils in its immediate neighbourhood, and that of a large *nala* which runs through the centre of the village area in whose basin the best and deepest soils are found, as well as most of the village wells. The sections in plates II and III will show the effect of this configuration on the depth of the soil and generally on the economy of the village.

The Vel river itself runs in a rocky bed with an average depth of fifteen feet, covered largely with gravel. The second stream enters the river about the middle of the northern boundary. The pebbles in the beds of these streams as well as on the steep slopes down to them are

PLATE II.
(To face Page 11.)



Soil Map of the Village of Jategaon-Budruk.
(Sections on lines AB, CD, EF, GH, and IJ, are shown on Plates III. and IV.)

formed of the usual minerals of the trap area—rock crystal, flint, chalcedony, bloodstones, agates, carnelians and a few amethysts. Calcite is abundant and often very pure. Glauconite is everywhere as a green superficial coating to the fragments of rock. Zeolites are very very rare, though one or two were found in the river bed.

C. Soils of the Village

The village soils in the present case seem to have been chiefly obtained by the decomposition of the trap rocks *in situ* together with a certain amount of similar material washed from the surrounding hills. The depth and distribution of the soils is shown in the sections through the village land in Plates II and III. They are on the whole shallow, perhaps shallower than might have been expected in a village so far to the east in the Deccan. No soil is deeper than 2½ feet.

The soils of this village may be classified under three distinct types.

(1) *The medium black or light black soils.* Under this head we have included all those soils more than ten inches deep which have a more or less black colour. They vary usually from ten to twenty inches deep and the greatest depth we recorded was two feet and six inches. The total area of this type of soil is 1313 acres, or 53 per cent of the village area. Along the banks of the *nala* above referred to, the deepest soils occur. Under the soil a layer of *murum* was always found. This *murum* is nothing more than the first stage of decomposition of highly amygdaloidal trap in which the hydrolysis of the felspar causes the complete disintegration of the rock as a hard continuous mass. This material drains freely, and so, once water sinks below the level of the soil itself, it is practically lost and irrecoverable for the use of all crops and plants except large trees.

The black soils in this village are of a lighter and less clayey type than is usual in this part of the Deccan. The deep cracking of the soil in the dry weather, so characteristic of Deccan black soils only takes place here to a very limited extent, though this may be partly due to the large extension during the last few years of the system of ploughing as soon as the *kharif* or rains crop has been reaped, by means of the improved iron turnover plough put on the market by Messrs. Kirloskar Brothers.

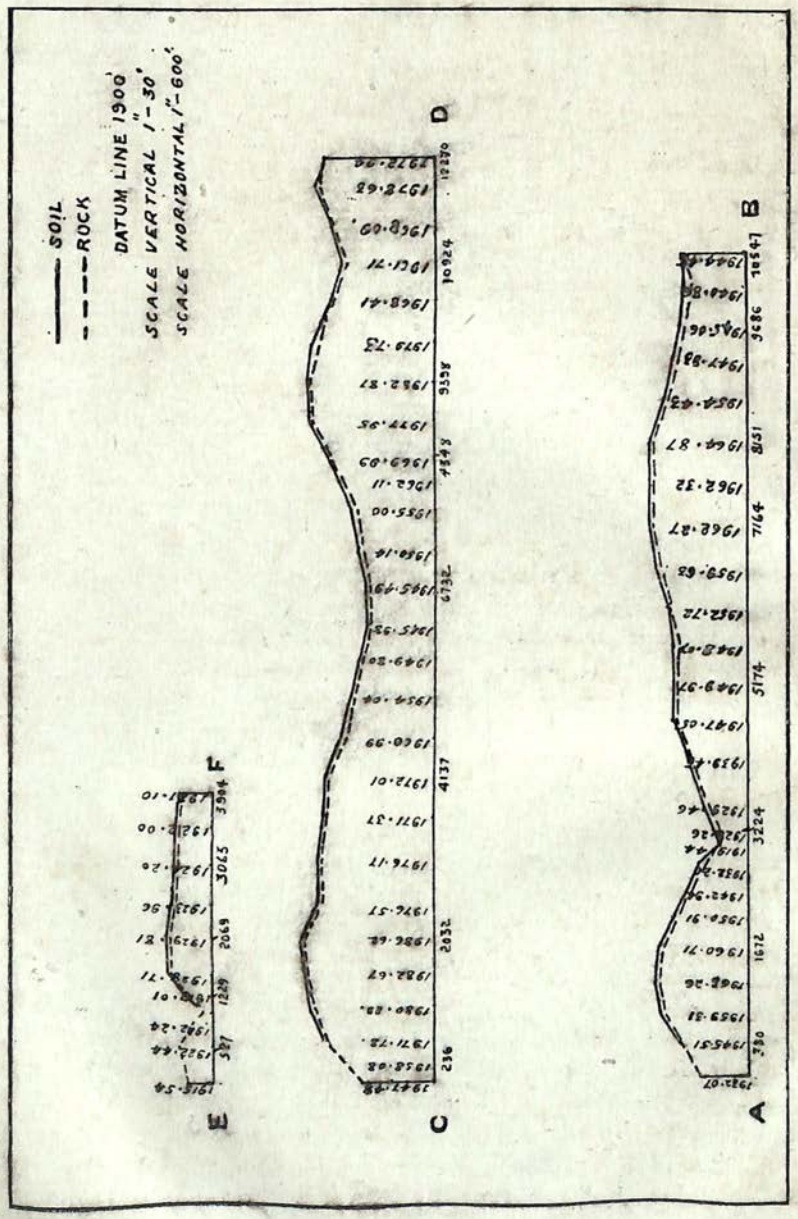
The type of soil as will be seen from the soil map (Plate IV) occurs chiefly round the northern and eastern boundaries of the village. These fields are fairly extensive and level and include the '*rabi* lands' of the village. The best among these latter are known as गव्हाळी or wheat land. The whole of the area classed under this head is not however capable of growing *rabi* crops, and much is occupied by *bajri* mixture (see chapter IV) in years of good rains in June or by *shalu jowar* when the rains are later. Wheat and gram are less grown. The presence of a well, where it occurs, makes these late crops secure. The garden lands of the village are all on this class of land, and grow (under well or other irrigation) sugar-cane, sweet potatoes, other similar crops, and oranges.

A physical and chemical examination of soil and subsoil from two typical places gave the following figures:—

PHYSICAL SOIL ANALYSIS

	Site No. 1		Site No. 2	
	Surface soil	Subsoil	Surface soil	Subsoil
	%		%	
Stones	7·1	8·3	13·3	17·5
Coarse Sand. . .	3·9	4·4	2·6	5·6
Fine Sand . . .	75·9	75·4	63·3	74·0
Coarse Silt . . .	6·9	8·0	14·1	7·6

PLATE III.
(To face Page 13.)



Sections through Village Area.
(For positions of lines AB, CD, & EF, see Plate II.)

	Site No. 1		Site No. 2	
	Surface soil	Subsoil	Surface soil	Subsoil
	%		%	
Medium Silt... ...	3·0	3·0	6·8	4·1
Fine Silt	5·6	5·1	6·8	4·1
Finest Silt and Clay	4·6	4·0	6·3	4·6

CHEMICAL ANALYSIS

Loss on Ignition	20·0	18·9	18·5	17·4
Insoluble Silicates	54·2	60·3	60·8	70·4
Lime	2·9	3·1	3·1	0·3
Potash	0·66	0·37	0·12	0·4
Phosphoric acid ...	0·03	0·10	0·05	0·03
Nitrogen	0·05	0·05	0·06	0·08

The figures indicate soils somewhat different in type. The second sample is a much coarser type than the first, but in both cases the large loss on ignition reveals the presence of much highly hydrated substance and hence of very sticky material in the finer portion of the soil.

(2) The *murmad* soil, which forms the second great class of land, and which consists of the highly porous *murum* derived directly from the decomposition of trap rock, is very extensive in this village. We have counted under this head even those soils which contain a little black soil substance but which are less than nine inches in depth and overlie true *murum*. The area amounts to 979½ acres or 40 per cent of the village area. It is found along the whole of the length of the Vel river and, again in a long strip through the eastern half of the village along the ridge indicated in the sections shown in plates II and III. In many cases this type of land is covered with stones and in some cases these are very thick.

This class of land is considered as capable only of growing *kharif* or rains crops—the *bajri* mixture (of

which more later) being the only crop of this type in the village. When the rains are scanty, the soils covered with stones are the most valued, as being better able to stand drought than other types of shallow soil found in the area. Most of these lands are ploughed in the hot weather with the improved iron plough previously referred to, and kept ready, by harrowing several times, for the *kharif* crop. They are capable when so prepared, of growing the *bajri* mixture with even moderate rain in June and July.

A physical and chemical examination of two typical *murmad* soils gave the following figures:—

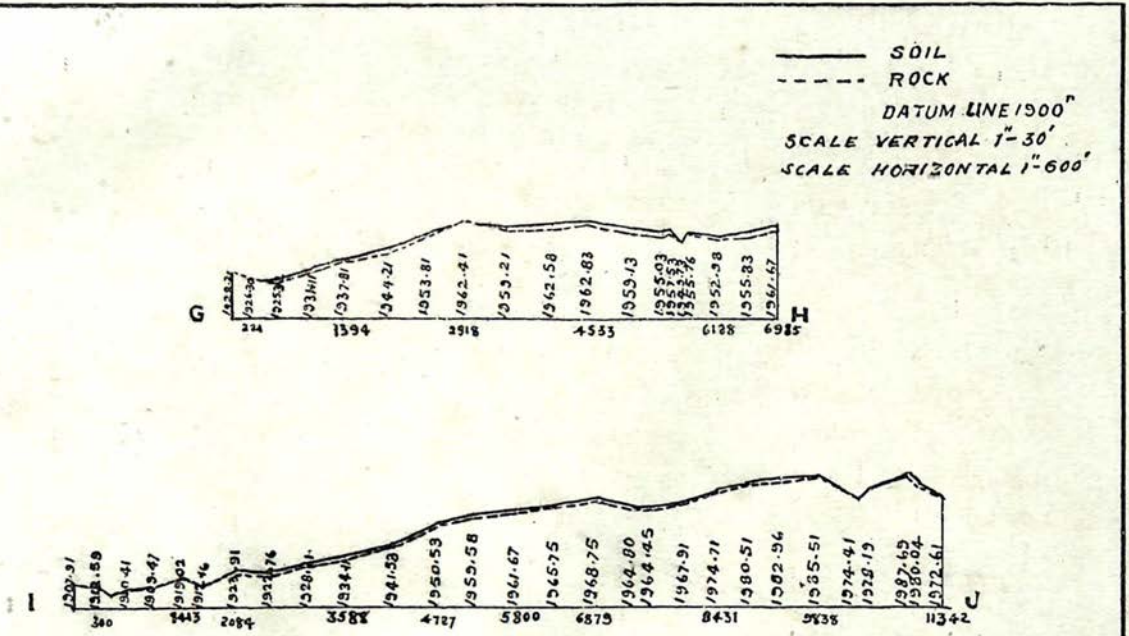
PHYSICAL ANALYSIS

	Site No. 1 Surface soil to 8 inches deep %	Site No. 2 Surface soil to 9 inches deep %
Stones	10·2	22·9
Coarse Sand	23·9	18·8
Fine Sand	41·6	59·0
Coarse Silt	10·2	11·6
Medium Silt	5·8	3·3
Fine Silt	8·7	3·9
Finest Silt and Clay ...	9·8	3·5

CHEMICAL ANALYSIS

Loss on Ignition	13·2	9·3
Insoluble Silicates	62·7	75·4
Lime	1·8	0·4
Potash	0·19	0·50
Phosphoric acid	0·06	0·08
Nitrogen	0·04	0·06

The figures show the variation in this type of land, but it needs to be emphasised that in these *murmad* soils



Sections through Village Area.

(For positions of lines GH and IJ see Plate II.)

the finer matter in the soil is not sufficiently hydrated to be clayey, and hence they are very pervious to water. This, together with their shallowness, accounts for their unsuitability for *rabi* crops, while when level enough to use as irrigated lands, as they sometimes are, they are known for their very large consumption of water.

(3) *The red soil* is the third type we have found and it forms but a small area in the village. According to our measurements it extends to 77 acres, or three per cent of the total area. It forms shallow soils with a depth up to nine inches with a distinct red colour, which grow *bajri* mixture during the monsoon. This type of land is largely found along an elevated rocky area to the east of the village and forms a very porous, dry, hungry soil.

A physical and chemical examination of a typical red soil gave the following figures:—

PHYSICAL SOIL ANALYSIS

	Surface soil to 9 inches deep %
Stones	16·1
Coarse Sand	7·6
Fine Sand	71·3
Coarse Silt	3·1
Medium Silt	10·1
Fine Silt	3·9
Finest Silt and Clay	4·0

CHEMICAL ANALYSIS

Loss on Ignition	11·5
Insoluble Silicates	76·1
Lime	0·6
Potash	0·15

	Surface soil to 9 inches deep %
Phosphoric acid	0·12
Nitrogen	0·06

These soils illustrate what has always been recognised by those who have had to deal with agricultural land in the Deccan, namely that the value of soils depend almost entirely on their retentiveness and their depth. The black soils are the best, not because of any essential richness, but because they retain water better than others. The others are inferior not because they are essentially poor, but because they are porous and water runs through them easily, out of the range of plant roots. As we have described in our previous publication on the conditions in a Deccan village, these two factors were recommended as the basis of the revenue survey of land in Western India as far back as 1835, and the basis was finally approved and standardised by Government in 1848. It may in fact, be worth while to quote again the standard table for the classification issued by the Government of Bombay at that time. All soils were classified as fractions of what was considered to be a standard good soil, namely one which was of "fine texture and black in colour with a depth of $1\frac{3}{4}$ cubits." This was termed a soil of "16 annas" value. It is supposed to be capable of bearing a full normal crop under average conditions. If such a soil had special advantages of position or irrigation its value might be higher. Soils inferior in depth or retentiveness were classed lower in the anna scale as "ten annas," "six annas" and so on. But the land revenue payable on agricultural land was fixed on the basis of the amount to be paid for land of "16 annas". The present land revenue for such land in this village is Rs. 1-14-0 per annum, and poorer land pays correspondingly less. The table for the determination of the classification of such land is as follows:—

Class	Relative value in class in annas or sixteenths of a rupee	Soils of the 1st order: Of fine uniform texture, varying in colour from deep black to dark brown	Soils of the 2nd order: Of uniform but coarser texture than the preceding and lighter also in colour, which is generally red	Soils of the 3rd order: Of coarse gravelly or loose friable texture and colour varying from light brown to grey
	annas	Depth in cubits	Depth in cubits	Depth in cubits
1	16	1¾	—	—
2	14	1½	1¾	—
3	12	1¼	1½	—
4	10	1	1¼	—
5	8	¾	1	—
6	6	½	¾	1
7	4½	¼	½	¾
8	3	—	¼	½
9	2	—	—	¼

In the present village the village area is classified under this system as follows:—

18½ annas . .	7 acres*
18 annas . .	2 acres
15 and 15½ annas	22 acres
14 annas . .	6 acres
13 and 13½ annas	7 acres
12 and 12½ annas	21 acres
11 and 11½ annas	56 acres
10 and 10½ annas	65 acres
9 and 9½ annas	146 acres
8 and 8½ annas	264 acres
7 and 7½ annas	331 acres
6 and 6½ annas	336 acres
5 and 5½ annas	493 acres
4 and 4½ annas	376 acres
3 and 3½ annas	118 acres

* We give the figures to the nearest acre.

2½ annas . .	11 acres
1 and 1½ annas	12 acres

If we summarise these figures, we get the following:—

Land over 12 annas, or soil considered to be of above average value	44 acres
Land 8 to 12 annas inclusive, or of medium value	552 acres
Land 4 to 7½ annas inclusive, or soil of poor character	1575 acres
Land under 4 annas in value, or soil agriculturally almost worthless	141 acres
Grazing area — unassessed	57 acres
Public lands (village site, roads, etc.) . .	81 acres
Total village area	2450 acres

As would be expected from our description of the soil types actually found, and the general shallowness even of the best soils, it is evident that the land from a revenue point of view would naturally be of a low class. The average valuation of the land actually assessed in the village is, in fact, only 6½ annas.* And this figure must be borne in mind when we come to consider the general average quality reached by the crops from year to year.

It is interesting to compare these figures with those obtained from our own consideration of the texture and composition alone. These were (see pages 11 to 16).

1. Medium and light Black Soils . . .	1313 acres
2. *Murmad* Soils	979½ acres
3. Red Soils	77 acres
	2369½ †

*How low the quality of the soil is will be realised when it is stated that the valuation of the soil of the village previously studied (Pimpla Soudagar) was 10·5 annas.

† This does not agree with the previous figure for area, as some practically bare rock surfaces are here excluded.

It is evident, therefore, that it is not the actual quality of the soils which is so much at fault, for the medium and light black soils would if deep enough be all classified as '8 annas' or over, but their depth in this village is generally too small. The 'murmad' and the red soils would always be below '8 annas' in valuation, and their improvement will always be a very doubtful proposition except where silt can be collected and their depth so increased. The whole development and improvement of the village rests on the possibility of making more of the medium or light black soils. What has been done in this direction will be described later.

D. Drainage of the Village

The drainage of a Deccan village, so far as surface water is concerned, is in general very complete, but takes place with a very large amount of erosion and hence loss of good soil, and, in addition, it occurs without the rainfall penetrating the soil to anything like the extent which should be the case if the best agricutural result is to be obtained from the water. Hence almost the first agricultural improvement in a village is in the nature of embankment of fields, levelling of land and then surrounding the levelled portion by bunds, the terracing of areas in suitable places, and in general the prevention of water running off the surface of the land as far as is possible. We think it is not too much to say that the extent to which this work for the prevention of surface wash has been or is being done is perhaps the first measure of the extent to which a village or an individual land-owner has been or is progressive.

In the present case the area is very undulating. The actual drainage is in every direction as the drainage map (Plate V) indicates. The large *nala* passing through the heart of the village as a main drainage channel has

created a large number of smaller *nalas* which are really essentially nothing but gullies made by surface wash in heavy storms. The cart tracks themselves become large drainage channels during heavy rains and thus tend to get deeper and deeper below the level of the surrounding land. The beginning and extention of a gully can be seen very frequently in this as in other similar villages. The river itself acts similarly as a cause of the creation of numerous gullies. And the general result of the undulating character of the land is that, as we have described, the soils in the village are shallow and indeed far shallower than they ought to be considering the sources from which they are derived and the speed with which they are produced. Though the actual area made useless for cultivation of any sort by the gullying of which we have spoken is only 41 acres, yet this only represents a very small fraction of the damage which has been done.

Attempts to stop this erosion have been frequent and the village contains a considerable number of works, large and small, to prevent it. There are thirty-six embankments of fairly large size, that is to say of a length of more than one hundred feet and a height of more than a foot. There is one very large earthen embankment. There are again no less than seventy-two small *bunds,* many of them made with stones (loose) or stones and earth combined. In one or two cases an attempt is being made to stop erosion of the bunds themselves by planting *agaves* on them, and generally we found that the bunds were repaired every hot season, especially when the previous year has caused a breach. In 1917, during the course of our special inquiries, one of the largest bunds was being repaired with large stone blocks of a diameter of one foot or over, drawn to the spot by bullocks.

The care with which the existing bunds are repaired was a pleasant contrast with the carelessness which seemed

to prevail in the village we previously studied. Here, bunds for the prevention of erosion are still being made, several substantial ones having been constructed in the off-season during the year of our study by the villagers on their own lands. There are, of course, a large number of bunds which it would still pay to make in our opinion, but it is always a question how far it pays to protect the poorer land in this fashion.

E. Water-Supply of the Village

The water-supply, whether for drinking or for irrigation, in a Deccan village may be obtained from rivers and *nalas* or from wells. Let us first consider the extent to which in the present case the river and its connected *nalas* are used for this purpose.

The river itself, *at present,* is only a source of drinking water. As previously described it usually carries at least a trickle of water throughout the year, though in dry years it entirely dries up, as it did early in the cold season in 1918. In the latter contingency, temporary wells are excavated in the bed of the river and usually furnish at least enough water for drinking. In this way the river forms an important source, and in dry years almost the principal source, of the drinking water of the village. In the year when most of our investigations were made (1917), the river had ample water throughout the hot season, owing to the late rain of the previous year.

The river is also used for irrigation, but at present not so far as this village is concerned. The method of using the water of rivers such as the Vel for this purpose is to build with stones and earth, a temporary dam above the village site across the stream after the rains are over for the year, and guide the accumulated waters down a channel cut in the river bank to a point sufficiently far above the village that the water can run over the fields it is desired

to irrigate. Such a channel is called a *pat,* and there are two such *pats* originating in this village for the use of the village next below it on the river bank. Some of the most valuable garden and fruit lands in the latter village are watered with water so obtained from the Vel in the Jategaon area.

The Jategaon people have a similar *pat* which has its origin in the village (Mukhai) which lies above it on the same bank of the river, started at a point in the river bed above a natural waterfall of a few feet. This *pat* runs considerably more than a mile along the bank of the river until it reaches suitable land in Jategaon for irrigation. This was made very long ago, long before the memory of the oldest inhabitants and it seems probable that it must have been in existence for one hundred years or more, and probably long before that. Its ownership, or at any rate the right to use it, is in the hands of seven landowners, who hold it as a communal property.

After such long use, however, it was disappointing to find that it has been abandoned and that irrigation is not done now by its means. The story of this *pat,* we elicited from those who have a share in it, is very illustrative of the way in which such things are managed in a village like the present. The use of the channel involved an annual expense for clearing out the head, which silted up each year. This silting apparently was getting greater and demanding more and more work each year. Once the head of the channel was taken further up the river to avoid the difficulty, but this could not be repeated and the annual labour involved became greater and greater. In the meantime owing to a series of years of short rainfall in the latter part of the season, the water in the river became more and more deficient and after the famine year of 1900 no attempt was made to reopen the head of the *pat.* This led to the silting up of the channel head more than ever, but about 1911 an attempt was made

to reopen it, and for four years or so the *pat* was again used for irrigation. In 1915 it was again abandoned and has not been used since. Its use and disuse partly explain the extraordinary variations in the amount of irrigated crops in the village at different periods as follows:—

	Area under Irrigated Crops Total area Irrigated Acres
1886—87	72
1896—97	82
1897—98	75
1901—02	16
1906—07	13
1911—12	42
1917—18	66
1918—19	60
1919—20	48

When the increased value which irrigation of this sort gives to the production of villages like Jategaon is considered, it seems a pity that it is at present nobody's business to assist the cultivators in getting over the undoubted engineering and other difficulties that occur in maintaining a *pat,* like that under discussion. The problem in this case was as to how to keep open the head of the channel each year when there was sufficient water in the river, with the minimum of labour, and without interfering with the rights of the people in the village whence the supply is taken. The problem is too much for the people, and it is nobody's duty at present to enable them to meet it.

The water from the river, which forms such an important source of drinking water is on the whole remarkably pure. We took samples and analysed them, from the point of view of drinking water, both at the height of the hot weather in 1917 and just after the rainy season had

commenced.* We have been surprised how, in a river containing so little water in the hot weather, and used by a good many villages on its course as a source of water, the purity should be so well maintained.

Considered as a source of irrigation water, the river is excellent. The analysis at various times of the year of the water will be found in Appendix I, and it may be at once stated that it represents a very typical surface water in the Deccan. The figures are almost identical with those obtained in the river at Pimpla Soudagar, and the salts contained in the water are very characteristic. Carbonates are the chief salts, and among these the presence of much calcium and magnesium carbonate is what would be expected in a trap region where the trap contains much lime. The water always contains sodium carbonate or bicarbonate, or both, and a small quantity of sodium sulphate and chloride. The waters are really very soft, and could hardly be improved as irrigation waters.

A second important source of water-supply for both drinking and irrigation purposes is the *nala* which runs through the middle of the village area. In the year during which this enquiry was made, this *nala* had water in it throughout, though it usually dries up in the hot weather. As long as the supply is there, it is used for drinking by one-third of the population, and two public wells have been dug and built in the bed of the *nala* which extends

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* The actual figure of these analyses were as follows:—

	Sample on April 9th 1917 Parts per 100,000	Sample on June 9th 1917 Parts per 100,000
Free Ammonia.	0·0008	0·0008
Albuminoid Ammonia	0·0052	0·9070
Oxygen absorbed in 15 minutes . .	0·073	0·11
Oxygen absorbed in 4 hours . . .	0·130	0·19
Total soluble salts.	32·0	34·0
Chlorine.	5·6	2·8

the period for which it can be used. This *nala* is also, in good years, used as a source of irrigation, temporary bunds being made to store the water. In 1917 two such bunds had been made, to feed two water channels, capable of irrigating five or six acres. Two acres of sugar-cane were, in fact, irrigated by one of these channels.

The water from this *nala* was not quite so soft as that from the river. It was less, in fact, surface wash merely, and was more largely actual seepage through the softer rock on this side of the village. Its contents consisted still more of carbonates, and alkaline bicarbonates were always present in appreciable amount. The difference in composition at different times of the year was astonishingly small. The actual figures for the analyses of the water in April, June, October, and January will be found in Appendix II.

Apart from the direct use of the water for drinking and irrigation, this *nala* has special interest and importance in that it influences very greatly the third source of water-supply to the village,—that is to say the wells. Most of the wells are situated in the neighbourhood of this *nala*. Out of a total (including those not in use and partly filled up) of thirty-six wells, twenty-seven are within a distance of fifteen hundred feet from this *nala*. Of the rest, two are near the river, and the only good well not influenced by the *nala* or the river is in a small depression near the eastern boundary of the village.

The total number of wells either in use at present or that can be traced is thirty-six. All these are not old, and there has in comparatively recent years been considerable enterprise in the direction of digging or rather of reopening and building wells which contrasts very remarkably with the stagnation in the village we previously investigated. The wells at various dates have been as follows:—

Year	Number of wells			
	Pucca wells	Kachha wells	Wells not in use or filled up	Total
1886—87	12	4	2	18
1891—92	14	5	—	19
1896—97	12	3	8	23
1910—11	3	10	22	35
1911—12	3	10	23	36
1917	15	11	10	36

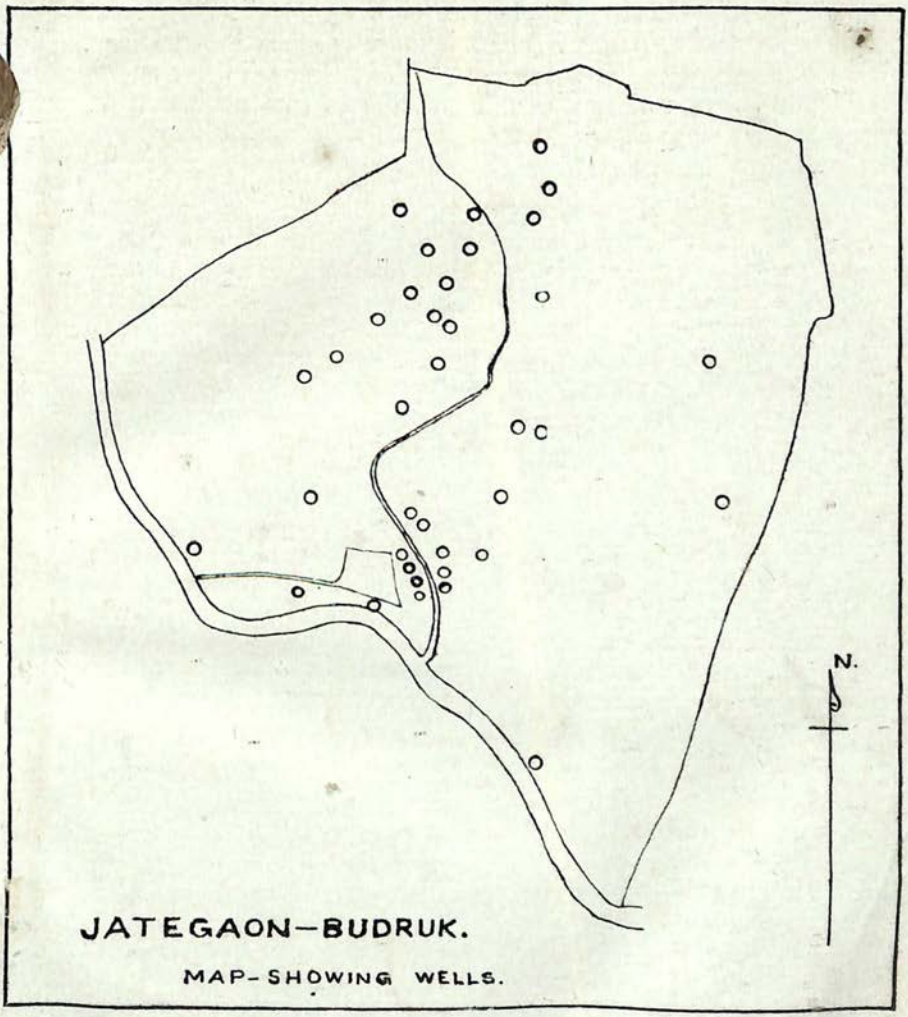
There seem, from these figures, to be periodical spurts of digging and reopening wells, which are then allowed to fall again into disuse. Between 1911-12 and 1917, a very large number of wells have been so reopened, and the number actually available for use at the time of our study was greater than at any previous time in the history of the village.

This enterprise has been assisted between 1892 and 1900, by the grant of *tagai* loans for well-digging and building.* In 1892 one man obtained a loan of Rs. 400 for this purpose; another took Rs. 72 in 1899 for the same purpose: while in 1900 one loan of Rs. 510 was granted. After this last year, the work does not seem to have been assisted by *tagai* loans up to 1917, though attempts to improve the water-supply from wells have not ceased. Within the two or three years which have elapsed since our study was made, three wells have been sunk. One of these was by two *mahars* who themselves did the digging, but obtained a *tagai* loan of Rs. 125 for expenses.

From the accounts given to us by the people, we get the following history of the wells. Out of the total number of wells (36) twenty are classed as old, that is to say they

Tagai loans are loans granted by Government at 6¼ % interest on the security of the borrower's land, chiefly for permanent land improvements, to be repaid in a term of years.

Plate V.
(To face Page 26.)



were dug and built beyond the memory of the present generation.* Of these seven have been allowed to fall into disuse and have hence got filled up. Six of the remainder date from a few years previous to 1907 when there was great activity in well-digging; probably as a result of the 1896 famine. The *kachha* or unbuilt wells are not permanent and may be quite different ones from those previously recorded, as the old ones may have been filled up and left no mark so that their very existence cannot be traced.

As the wells form one of the most important features in the life of the village and in its development, it will be necessary to consider them carefully and ascertain their value in this particular case. One can never afford to forget the peculiar conditions under which well-sinking is done in the Deccan. As wells practically always penetrate the trap rock, they are very expensive to dig. As they do not penetrate into any generalised water-bearing strata but depend on water in fissures, they are a very doubtful speculation. We have calculated that even in good villages, where wells are considered generally successful, at least forty per cent are failures. And elsewhere, the percentage is much higher. The digging and blasting of a well to thirty or forty feet costs at least Rs. 200 to Rs. 400 and so the risk for a small Deccan cultivator is great, and if he fails in striking water, he is ruined. It is true that if he gets a good supply of water, the land which can be irrigated from the well may be increased four or five times in value,—but it is a terrific gamble. It might be thought that a bore might be put down at small cost to test a proposed site, but as we are dealing with fissure water, this has not proved of much advantage.

In all the wells in the river and *nala* valleys the water

* This does not quite agree with the figures previously given from official records. But we give the statement as we elicited it.

appeared to be flowing towards the water-course, and not from it, so that it is certain that they have tapped a fissure supply on its way to the general subsoil drainage outlet. This is important as it indicates that while most of the wells are in the *nala* and river valleys, there is really not much greater likelihood of tapping water near the *nala* or the river than further away. The further away, however, from the watercourse, the deeper is the well before water is struck.

Considering the dryness of the area, and the apparent absence of large underground sources of water, the permanence of most of the wells right through the hot weather is remarkable, and in some cases in 1917 they contained more water in April than at any other part of the year. The slowness with which the wells fill up after the rains, is another feature which shows that in these apparently shallow waters we are tapping not merely seepage waters from the surface, but a much more deep-seated supply.

There seems little need to describe each well individually though the analysis of the water in each at four seasons of the year is shown in appendix III. But generally it may be said that the waters were typical sub-surface Deccan trap waters. The solid matter in the water varied from about twenty parts to about seventy parts per 100,000. There appeared to be no connection between the amount of salts in the water and the permanence of its water-supply. The salts in the waters were, as is usual, chiefly carbonates, many were slightly alkaline, and nearly all contained alkaline bicarbonates. Magnesium salts were present, as in all trap-waters, in fair amount. Sulphates are usually very small in amount. If there is an exceptionally large quantity of salts, the excess is usually due to the presence of chlorides and alkaline bicarbonates, and the most striking cases of this occurred in wells situated far away from the village site. The most remarkable

feature, we think, of all these (and of most other trap-waters) is the presence of alkaline bicarbonates in relatively large quantity. In this village, with its light and fairly easily drained soils, this is not a matter of great moment, but in places with a very sticky black cotton soil it becomes a matter of considerable economic importance.

These wells are not used to their full capacity as sources of irrigation. We calculate that they were capable of watering eighty acres of *rabi* crops in the year 1916-17 when our inquiries were made, but only sixty arces were irrigated in that year. The things which prevent the full use of wells for this purpose are the following:—

(1) The sub-division and fragmentation of holdings, of which more later, which prevents the water when raised being used economically.

(2) The combined ownership of wells, which often prevents their repairs if one of the partners will not pay his share of the cost, and which often causes disputes as to the using of the water.

(3) The fact that for irrigation a good deal of expenditure of money and energy is needed to make the land fit to take water economically.

We feel, however, that these reasons are capable of being got over, and that if a genuine communal village spirit could be fostered and encouraged, it would not be long before every well which has a permanent supply would be in use,—to the very great increase, in wealth, of the village.

CHAPTER III.

THE LAND AND ITS DIVISION

We have now described the village selected for our study as it is affected by the physical conditions of the portion of the country in which it lies. The reactions on this environment of the land laws or the conditions of land tenure remain to be described both as they are now, as they have been during the three hundred years, for which a certain amount of record exists.

The earlier records of each Deccan village, so far as they exist at all, are kept in the Record Office at Poona. At the time of the *Inam* Commission in the middle of the last century the papers, such as they were, were carefully sorted out, and now there is in that office a packet of manuscript documents relating to each of the villages carefully docketed and available for study. These collections of documents, which have hitherto been an almost unworked field, contain perhaps the most valuable collection of economic material that can be found anywhere in peninsular India. Unfortunately, there are practically no documents older than 1698 A. D., and it is supposed that Aurungzebe carried off any older records to Delhi when he conquered the older Mohammedan kingdoms of the Deccan. The dockets of papers since that time are often (as in the case of the village under study) in the most fragmentary condition. Records of an odd year may be found, and then there will be a gap for a long period. An odd page, evidently of the village accounts, will be present, and no more. But there is enough to enable us to piece together the condition of

affairs in the village until after the establishment of British rule.

As in our former study of Pimpla Soudagar, we will consider the history of the land, and the land-holding in the village under the following heads:—

A. The Village *inams* or lands held under privileged tenure.

B. The history of the land revenue from the village.

C. The land-holdings in the village.

D. The areas taken for cultivation in the village.

A. The Village *Inams*

In the parlance of the old rulers of the Deccan, an *inam* was a piece of land granted by the ruler for a special purpose, either without any annual charge or with a reduced land assessment. Such grants were often made to temples, to groups of village servants, to the headman of a village or subdivision as payment for his work, to court favourites as a piece of favouritism, to successful soldiers, and to many others. Let us see what happened in Jategaon Budruk.

We first get a glimpse of the area already given in *inam* grants in 1698, where it is recorded that the area of *inam* land in the village is 144 acres out of a total village area of 1963 acres.* No details are given, and no more

* We have converted the old measures into acres in the following way. The land measure adopted in the old records of Jategaon Budruk is the *chahur* (चाहुर). This is divided into 120 parts called *bighas* (बिघा). The *bigha* is again divided into 20 parts called *pand* (पांड). These measures, as is well known have not a constant value everywhere. In Jategaon we have fixed them as follows. The records of the village are in these measurements up to 1827. The village area in this year is given as 29 *chahurs* and 18 *bighas*. The nearest year in which we have the village area in acres is 1857, and the area is then given as 2089 acres 19 gunthas. We have taken for granted that the village area remained unchanged from 1827 to 1857, and if this is so, 29 *chahurs* and 18 *bighas* are equivalent to 2089 acres 19 gunthas. Thus:—

are in fact available until 1745, when we find the area has been increased to 180 acres. In this year, an order was passed by the Peshwa † to grant thirty-six acres of land to "Malhar Bhat *bin* Krishna Bhat Puranik residing at Kasba, Khed." No details are found as to the nature of the services of this inamdar: he was probably a court favourite.

In 1770, we get, for the first time, a statement as to the exact nature of these *inam* lands. They are as follows:—

Mukadam	72 acres
Malhar Bhat Puranik ...	36 acres
Mahars	72 acres
Gayaran	18 acres

The first of these is the *inam* of the *patil* or headman of the village; the third is that of the *mahars*, a class of village servants who are always provided with land, as they form an absolutely necessary part of the village organisation. These two *inam* grants are of a type which will be found everywhere and they, probably, antedate any action whatever of the central government, which simply formally allowed *inams* which already existed. The second is the special *inam* grant made, as already described above, by the Peshwa in 1745. The fourth so-called *inam (gayaran)* simply represents the public grazing ground of the village, and its entry here indicates that it was looked upon by the rulers as a public right. It is sometimes included among the *inam* lands, sometimes not. In 1796 it appears as double the area in any previous case at 36 acres and after that date this item varies a good deal. We had perhaps better exclude it from consideration for the present.*

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1 *Chahur* in Jategaon Budruk = 72·023 acres
1 *Bigha* do. = 0·6 acres
or 1 acre do. = 1·66 *bigha*

† Balaji Bajirao (Nana Saheb).

If we exclude the *gayaran* area the *inam* lands in this village remained at 180 acres from 1741 to 1803. Of this 144 acres consisted of local service *inams* to the village headman and the village mahars: the remainder was a grant to an outsider by order of the central government at Poona. But between 1803 and 1808 there seems to have been a scramble for fragments of *inam* land, and the area went up at the latter date to 234 acres of a rise of 54 acres (30 per cent) in five years. The items are as follows:—

Mukadam (Patil)	72 acres
Malhar Bhat Puranik ...	36 acres
Mahars	72 acres
Kulkarni	27 acres
Ramoshi	18 acres
Temple	9 acres

There are three new *inams* therefore, two to new classes of village officials and servants, the third for the village temple. This last is one of the commonest and oldest types of land grants, and it is rather astonishing that it only appears so late in the history of the village. It is devoted, unlike similar *inams* in many other villages, to the maintenance of the temple in the village itself, and not for a more important shrine in another village. The *kulkarni inam* is for the village accountant, whose existence now appears noticed for the first time. There is no doubt that there had been a *kulkarni* long before, but now only was he able to get land granted to him on account of his work. The village *ramoshi* or watchman is also able to command a land grant for his work for the first time.

At this stage the *inam* lands remained until after the British era began. In 1823, except that the *kulkarni inam* had mysteriously though slightly increased, the tale was the same. No change had occurred in 1827. We may

now pass over ninety years, and the *inam* grantees are practically the same, though the area has appearently been reduced. Comparing 1823 and 1917 we have as follows:—

	1823	1917	
	acres	acres	gunthas
Patil...	72	60	19
Puranik	36	25	6
Kulkarni	28¾	21	31
Temple	9	4	23
Ramoshi	18	18	1
Mahars	72	61	26
Deshpande ...	—	3	2
	235¾	174	28

The *deshpande* or subdivisional officer under the Peshwa's regime suddenly appears as an *inamdar* now; how this item got into the list at the present stage we have not been able to trace.

The land held under privileged or free tenure thus amounts now to 7·7 per cent of the total assessed area of the village. By the operation of the ordinary Hindu law of inheritance, the benefit is now divided among nineteen sharers. The *patil's inam* is divided among four people, that of the *mahars* among nine families, while that of the *ramoshi's* is shared by two members of the village community. The remainder are undivided. The proportion of the total assessment (Rs. 132-10-0) of this *inam* land which is payable (Rs. 100) to Government is 76 per cent.

B. The Land Revenue from the Village

On the theory, which has always prevailed among the ruling classes in India, that the ultimate property in the land was in the ruler, the Government of the day has always held that it had a right to take a certain proportion of the crop from all the land. Sometimes a portion of the crop itself was taken; sometimes a cash payment

in lieu of it was obtained. But always there was the demand, whoever the ruler might be. Whether the payment was in the nature of a rent, or a contribution in return for defence by the ruler, or a payment whose only basis was the right of the strongest, cannot be settled to-day, for its origin is lost in the period before any records have come down to us. The matter has been hotly and strongly debated now for generations, but even yet without general agreement.

But the actual revenue taken has, since the records became available for the present village in 1698, been recorded in cash, and the portion which actually reached the public treasury has been remitted in this form. The sum has been extraordinarily variable, one of the reasons for which we will indicate below. The area on which the revenue has been assessed has shown a tendency to rise, probably from the inclusion of land which was uncultivated previously and considered waste, or from more exact measurement. The variations in the assessed area have been as follows:—

1698	1963 acres
1770	2008 acres
1785	1954 acres
1796 and 1803	1981 acres
1808 and 1817	1954 acres
1823 to 1857-58	2089 acres
1860-61 to 1873-74	2099 acres
1873-74 to 1875-76	2273 acres
1876-77 to date—	2271 acres

In addition to this there are 179 acres in the village of which 41 acres are *"pot kharab"*, that is to say so poor as to be unassessed, while the rest is public land occupied by the actual village site (*gaothan*), roads and paths, river, and the public grazing land (*gayaran*).

For this area the actual revenue assessed or obtained is on record for a number of years. It is not always

clear as to whether the figure given was that obtained or only the figure of the assessment. In the earlier years one figure only is given, and again we do not know whether the amount represents the gross or the nett returns. In 1698 the assessed revenue is recorded as Rs. 301, and the cultivated area as 328 acres. The assessment on the dry land is 15·8 annas per acre and Rs. 4-5-0 per acre on irrigated land. By 1724 this had increased to Rs. 526-. Unirrigated land under cultivation was only 130 acres, and was charged at Rs. 1-8-0 per acre. Three years later the data are more complete, Rs. 666-10-6 is the assessment, but the amount realised was Rs. 620—3—0. The total assessment works out at (on the whole village assessed area) 5½ annas per acre, and the amount realised to 5 annas per acre. It must be remembered, however, that (as we shall show later) at this time only the actually cultivated area paid assessment, and so the rate was really much higher than this, though for the actual year we do not know its amount. After this date there is a rapid rise in the amount of land assessment recovered. In 1730 the land revenue demanded was Rs. 1173, of which Rs. 18 are from the *mahars* for their *inam* land, and the curious item of Rs. 12 for "presents."

The next glimpse we get is in 1770 when more details are given as follows:—

Total Assessed Revenue made up of	Rs.	2587	15	0
(1) Land and other taxes ...	Rs.	1936	11	0
(2) Balance of previous year's revenue unpaid	Rs.	464	0	0
(3) *Bigari tax**	Rs.	29	0	0
(4) Contribution for Darbar expenses	Rs.	60	0	0

**Bigari tax*—Tax to pay for impressed labour (?)

(5) *Berad**	Rs.	5	0	0
(6) *Adansura*†	Rs.	43	0	0
(7) For purchase ol *bajri*‡ ...	Rs.	50	0	0

Now of the nature of all these sources of income we are not clear. But others are very easy to understand. 'Suspension of land revenue' evidently already existed in the time of the later Peshwas. The first note of such suspensions that we have found is in an investigation made into the condition of the village in 1768 when Rs. 300 of revenue was found to be suspended.

But out of the total moneys received Rs. 216 had to be repaid to the *hukkadars,* or people who had *inams* or other rights over portions of the village revenue, while Rs. 275-3-0 was required for village expenses, so that this year the nett revenue paid to the Peshwa's government on account of the year itself was as follows:—

Land and other taxes		Rs. 2587-15-0
Less *a)* Payable to *hukkadars*	Rs. 216-0-0	
„ *b)* Village expenses	„ 275-3-0	
„ *c)* Suspended land revenue of previous year	„ 464-0-0	
	955-3-0	
Balance (nett revenue)		Rs. 1632-12-0

After this time the land revenue collected and the nett amount paid to the treasury tended to decrease. In 1785 only Rs. 552-10-0 was collected of which Rs. 71-4-0 went in expenses giving a *nett* revenue of Rs. 481-6-0. In 1790 only Rs. 66-4-0 was collected while expenses amounted to

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* The item '*berad*' is probably a charge on wandering tribes staying in the village.

† *Adansura* is a cess levied on all trades in the village except cultivation.

‡ The nature of the item:—"For purchase of *bajri*", is quite unknown. Whether it came from the village itself at all is doubtful, but we are assuming that it was in some undefined way, a part of the village revenue.

Rs. 74-0-0 so that no revenue was received at all on this year's account. In 1796 there was a forced contribution for Daulatrao Shinde's army, and the village accounts stand thus:—

Total realised revenue	Rs.	1311- 8-0
Expenses		
a) Village expenses	„	160- 4-0
b) Daulatrao Shinde's Army	„	904- 8-0
c) Paid to Peshwa on tour	„	120- 0-0
	„	1184-12-0
Nett revenue at end of year	„	126-12-0

If we add item (*c*) to this last figure, we find that the Peshwa's treasury only benefited to the extent of Rs. 246-12-0 in this disastrous year.

The story of the next few years is one of decreasing revenues and increasing village expenses, and as a consequence, less and less revenue to the central government. The same series of events occurred as we have previously described in our study of Pimpla Soudagar.

A complete change came after the British conquest, when in 1823 an almost unheard-of revenue of Rs. 2121-0-0 was collected and the village expenses went down to half what they had been in 1817. The following is a summary for four dates for which we have details.

	1803	1808	1817	1823
Total realised revenue	Rs. 1009	Rs. 818	Rs. 792	Rs. 2121
Village expenses	„ 1009	„ 318	„ 365	„ 171
Nett revenue	nil	„ 500	„ 427	„ 1950

There is one very interesting feature which seems clear from these old papers, and that is the fact that *assessment is only paid on area actually cultivated,* and not on the whole village land. The figures for three typical years may be quoted.

1698—*Area cultivated*

		acres	gunthas	
a)	Dry or *jirayat* land—	318	28½	Rs. at 0-15-9 per acre
b)	Garden land	— 9	12½	Rs. at 4- 5-2 per acre

Total revenue actually from land Rs. 297.

1796—*Area cultivated*

a)	*Sosti* land*	—873 acres	giving Rs. 848-12-0
b)	*Upri* land	—288 acres	giving Rs. 183- 0-0
c)	*Kauli* land	—207 acres	giving Rs. 69- 6-0
d)	Garden land—	9 acres	giving Rs. 56- 0-0
			Total Rs. 1157-2-0

396 acres were noted as uncultivated and hence not taxed.

1803—*Area cultivated*

a)	*Sosti* land*	—720 acres	giving Rs. 800-0-0
b)	*Upri* land	—504 acres	giving Rs. 139-0-0
c)	Garden land—	9 acres	giving Rs. 56-0-0
			Total Rs. 995-0-0

540 acres were noted as uncultivated and hence not taxed.

The fact that land actually uncultivated did not pay assessment is a very important one if it applies generally to villages in the Peshwa's time.

Since the time quoted we have entered into the era of ordinary assessments, and of the ordinary land revenue of British times. From the introduction of the system of periodical assessments into this village in 1844-45, much information will he found in the various settlement reports. We need merely quote the figures for land revenue under each settlement.

1. For the first thirty years period (on the basis of the returns for 1871-72) the amount of land assessment for the whole village was Rs. 1161, or at the rate of Rs. 0-9-8 per acre for the whole assessed area of the village.

Sosti land—fully assessed land. *Upri* land—land rented without occupancy rights. *Kauli* land—land newly brought under cultivation under a Government guarantee.

2. For the second thirty years period, the land assessment for the whole village was Rs. 1467 or at the rate of 0-11-4 per acre for the whole fully assessed area of the village.

3. In 1905 a third settlement was proposed, and it was then suggested that the total land assessment should be Rs. 1405 or a slight reduction giving an average rate for the whole assessed area of the village of 0-10-10 per acre. The proposals of this report were never brought into force.

5. In 1915 another settlement was proposed, and has now been carried into effect from 1916-17. According to this the total land assessment of fully assessed land has been raised to Rs. 1581 or 0-12-2 per acre.

C. Holdings in the Village

In our previous study of a Deccan village, one of the most interesting points elucidated was the gradual increase in the number of independent holdings, and in recent years, the consequent gradual reduction of these in size. In the present village there was a good deal of unoccupied land, though there is none now, and all further increase in the number of land-holders must be brought about by the subdivision of those holdings already existing.

The early records in this matter are very incomplete, and all the notes we have been able to find in the earlier days are as to the total number of land-holders in the village. These numbered six only in 1724, nine, three years later, while the number had increased to fourteen by 1780. Of these fourteen nine were holders of dry land (though three among them had garden land also) and three *kauli* land-holders*. Fifty five years later (1785) the land-holders numbered forty two, showing the rapid way in which the holders of land multiplied during the

* *A Kauli* land-holder was one who had brought waste land into cultivation under a guarantee (*kaul*) from the Government.

relatively peaceful time of the palmy days of the Peshwa's rule.

In 1790 the number of land-holders had dropped to thirty-four and we may now indicate the size and character of the holdings. This is shown in the following table:—

Number with more than 100 acres of land	1
Number with from 50 to 100 acres of land	6
Number with from 20 to 50 acres of land	24
Number with less than 20 acres of land	3
Largest individual holding	108 acres.
Smallest individual holding	18 acres.
Average size of holding	43 acres.

The number of holders fell further before 1796 to twenty-three,—a sure sign of disturbed conditions,—and remained almost at this figure till 1803, when there were twenty-four holders only. The area held also fell and was now merely 200 acres lower than in 1790. The distribution among these was as follows:—

Number with more than 100 acres of land	1
Number with 50 to 100 acres of land	8
Number between 20 and 50 acres of land	15
Largest individual holding	108 acres.
Smallest individual holding	36 acres.
Average size of holding	51 acres.

In 1817, just before the country came under British rule the number of land-holders had increased to 36, and after this time the increase was rapid, reaching 50 by 1823*. At these dates we find the following state of things.

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*There was a very rapid occupation of the land formerly unoccupied in the early years of the nineteenth century as will be seen by the following figures. Total land held 1790-1413 acres; 1803-1224 acres; 1817-2032 acres; 1823-1702 acres.

	1817	1823
Number with more than 100 acres of land	6	—
Number with 50 to 100 acres of land	8	8
Number between 20 and 50 acres of land	14	34
Number below 20 acres of land	8	8
Largest individual holding	252 acres	99 acres.
Smallest individual holding	4½ acres	1¼ acres.
Average size of holding	56½ acres	34 acres.

Let us now compare the present condition of things, in 1917. The holdings stood as follows:—

Total number of holdings (including those of *inam* land and joint buildings)	146
Total number of holdings, excluding joint holdings held by one of the joint holders	139
Total number of holdings held under *inam* rights	19
Number of holders with more than 150 acres	1
Number of holders with 100 to 150 acres ...	1
Number of holders with 50 to 100 acres ...	5
Number of holders with 40 to 50 acres ...	4
Number of holders with 30 to 40 acres... ...	6
Number of holders with 20 to 30 acres... ...	16
Number of holders with 10 to 20 acres... ...	43
Number of holders with 5 to 10 acres... ...	34
Number of holders with 1 to 5 acres	25
Number of holders with less than 1 acre ...	11

All these figures include the holders of *inams* and also include joint holdings.

The same process has, therefore, evidently gone on in this village as elsewhere, though not to the same extent as in Pimpla Soudagar which we previously studied. 77 per cent of the holdings are now less than 20 acres in size, and 48 per cent are less than 10 acres. At Pimpla Soudagar 81 per cent were below 10 acres. The value of a holding cannot be however judged by its size alone, and as

the land value by the revenue survey test is only 65 per cent as great in Jategaon as in Pimpla Soudagar, the holdings in the present village would have to be very much greater to be of equal agricultural value.

If we take (see our previous publication) thirteen acres of dry and garden land in the proportion in which they exist in this village as being an economic holding* at Pimpla Soudagar (and this is a minimum), the size of such a holding here (basing the size on soil alone and taking no account of the more uncertain climate) would be 20 acres. If this is taken as the standard then seventy-seven per cent of the holders have land below the necessary size, even if the land is held in one block. Looking at the village in this way there is little difference, in essence, between the state of affairs here and that in the village we formerly studied. It means, to repeat what we have elsewhere said, that by far the greater proportion of holdings could not, under the most favourable circumstances maintain their owners, but that they must rely on other occupations either at home or away, to support themselves and their families, or they must sublet their holdings. It looks almost as if we had reached the limit of sub-division, below which it is not worth while to divide.

As is so usual in India, the feature which makes an observer despair, however, is not the smallness of the holdings, but the way in which each holding is divided into fragments. This, as is well known, is due to the plan adopted in inheritance under Hindu custom, when each piece of land is usually divided among the inheritors, resulting in an enormous multiplication of minute plots.

In the present case out of 146 land-holders, thirty held their land in one block. The actual conditions are shown in the following table:—

* An economic holding is one which will provide for an average family at the minimum standard of life considered satisfactory.

Number of Plots held	Number of holders with this no. of plots	Average area of holding	Largest holding	Largest plot	Smallest holding	Smallest plot
		acres	acres	acres	acres	acres
One	30	8·5	24·8	24·8	0·075	0·075
Two	32	10·5	38·8	30·0	0· 40	0·100
Three	19	12·6	42·9	28·2	0· 92	0·050
Four	14	12·4	33·5	17·8	2· 92	0·075
Five	22	12·0	40·1	17·7	3· 65	0·050
Six	10	19·1	56·8	22·8	7· 10	0·050
Seven	9	25·8	58·9	18·6	8· 30	0·125
Eight	6	64·2	137·3	31·2	16· 67	0·125
Nine	1	28·0	28·0	8·8	28· 00	0·600
Eighteen	1	45·2	45·2	5·6	45· 20	0·325
Twenty	1	58·1	58·1	11·9	58· 10	0·200
Twenty-six	1	172·9	172·9	32·7	172· 95	0·150
561 plots	146					

Thus we have 561 plots in the hands or 146 holders or nearly four plots per holder. The size of these plots is as follows:—

Size of Plots	Number of plots of each size.
Over 30 acres	3
20 to 30 acres	8
10 to 20 acres	51
5 to 10 acres	95
3 to 5 acres	69
2 to 3 acres	58
1 to 2 acres	98
Below one acre	178*

*The plots below one acre were actually as follows:—

30—40 gunthas	34	5—10 gunthas	40
20—30 gunthas	31	Below 5 gunthas	13
10—20 gunthas	51	(one guntha=$\frac{1}{40}$ acre)	

At first sight the fragmentation does not seem here to have reached such a serious condition as in many other villages, for instance in our former study of Pimpla Soudagar. But the size of fragments as of holdings must be taken in connection with their value, and by soil value only, the fragments should be here 54 per cent bigger than in the case previously studied, and if this is taken into account the 'effective fragmentation' (as we may term it) seems practically as great.

Since attention was called to the evils of fragmentation in the Deccan by Keatinge a few years ago, a large amount of discussion has taken place round it. The subject has been discussed by the Indian Board of Agriculture, has been the matter of consideration by a State committee in Baroda, and a bill was prepared for introduction in the Bombay Legislative Council, to make it possible for holdings to be made permanently impartible. But no policy has yet been definitely adopted to prevent the process going on. We feel from a study of this and other villages that in many places, it has almost reached its limit, and the further cutting up of the land into more minute fragments will be counterbalanced by consolidation by purchase.

It is obvious that when a land-holder holds too little land to keep him and his family, he may either leave the village without relinquishing ownership and sublet his land, or he may become a labourer either for part or the whole of his time. The number of land-holders who now cultivate their holdings in Jategaon is 99 or 68 per cent of the whole. This gives an idea of the extent to which these two processes are in operation.

D. Areas held or taken for Cultivation

The land-holder in all parts of the world is not invariably a cultivator, in fact, he is more commonly so in the Deccan than almost anywhere. But even here leasing

is common, and while there are 146 land-holders there are only 114 actual separate people cultivating the land. Out of these, the greater part are land-holders who have leased land from others in addition to their own: the remainder are non-land-holding people, either from the village or outside, who have leased land as an investment, and cultivate it for what they can make.

The relation between the size of the areas held by the various holders and the sizes of the areas cultivated by the various cultivators is shown in the following statement:—

	Holdings		Areas cultivated by one man	
	Number	Percentage of total number	Number	Percentage
Above 100 acres	2	1·4	1	0·9
50 to 100 acres	5	3·5	5	4·4
40 to 50 acres	4	2·7	9	7·9
30 to 40 acres	6	4·1	9	7·9
20 to 30 acres	16	10·9	21	18·4
10 to 20 acres	43	29·5	27	23·7
5 to 10 acres	34	23·3	24	21·0
1 to 5 acres	25	17·1	12	10·5
Below 1 acre	11	7·5	6	5·3
	146	100·0	114	100·0

If we take 20 acres (see above) as the minimum size of an economic holding in this village, we see that while 23 per cent of the holdings are above the limit, no less than 39 per cent of the areas cultivated are larger than this. We have, in fact, a repetition of what we have previously observed, that in a highly subdivided and fragmented village, the areas of cultivation tend to

become larger than the areas owned, and this will probably go on to a greater extent, and indeed, as we have shown, the general rise in prices which has now long been going on, tends to make larger units of cultivation necessary.

Sixty per cent of the cultivators cultivate less than that which was needed in 1917 to support themselves at their own standard of life. These people must have a supplementary source of income, by hired labour, or by a member of the family migrating to Bombay or some big town,—or they must live below their own standard of life. The proportion is not so large as we found it in Pimpla Soudagar (77 per cent), but it is still very high.

It must be noted, however, that to the cultivators of very small patches, agriculture must usually be merely a subsidiary occupation the main source of income being labour. We will return to this point later.

The fragmentation of the cultivation is not in this village quite so great as the fragmentation of the holdings. The following table shows this:—

	Fragmentation of			
	(1) Holdings		(2) Cultivation	
	Number with specified number of fragments	Per cent of total	Number with specified number of fragments	Per cent of total
1 fragment	30	20·6	24	21·0
2-5 fragments ...	87	59·5	59	51·7
6-10 fragments ...	26	17·8	29	25·5
11-15 fragments ...	—	—	2	1.8
16-20 fragments ...	2	1·4	—	—
21-25 fragments ...	—	—	—	—
Above 25 fragments	1	0·7	—	—
	146	100·0	114	100·0

An even better idea may be reached as to the fragmentation of the separate plots of cultivation numbering 402 by the following statement of the actual size of these plots.

Size of plots	Number of plots of each size.
Over 30 acres	4
20 to 30 acres	11
10 to 20 acres	52
5 to 10 acres	93
3 to 5 acres	49
1 to 3 acres	69
¾ acre to 1 acre	24
½ acre to ¾ acre	21
¼ acre to ½ acre	41
⅛ acre to ¼ acre	34
Below ⅛ acre	4

" It is evident that the fragmentation of cultivation is more important and serious than that of holdings. Who holds the land, is, from the point of view of production, a matter of no importance;—the vital matter is as to who cultivates it. If, therefore, we have greater consolidation of cultivation than we have of holdings, it shows that the tendency is in the right direction for making the best use of the land. This is what is happening in the present village. and is perhaps a sign that the evils of minute fragmentation have been realised, and that it is in process of gradual correction.

The fragmentation of cultivation in a village which is and probably must always be chiefly cultivated by non-intensive crops has no advantage, and, economically, no justification. It is an inevitable result of the extreme fragmentation of holdings, and any attempt to deal with it must first deal with the latter. But the problem of getting rid of the evil which we have described has been so far beyond the skill of any one to solve, or even to

suggest a satisfactory solution without interfering drastically with present Hindu customs, and introducing a new principle into land policy in the country. The problem may solve itself. In the present village there are, as we have stated, distinct signs that is beginning to do so. The rise of prices, moreover, must we believe, lead to the consolidation of cultivation. But the whole question needs very careful watching coupled with experiments in several directions, and it is to be hoped that this watching and these experiments may be undertaken in connection with a condition of things which is materially hindering the economic progress of the country.

NOTE TO CHAPTER III.

Extract from Village Accounts for 1790 A. D.

(As this year is of special interest a translation of the actual accounts from the original manuscript may be of interest. It is as follows):—

Jamabandi at Jategaon Budruk, *Turuf* Pabal.
Prant Junnar. Year 1200

Tankha	Rs.	553	0	0
Deshmukhi at 10 % ...	„	55	6	0
	Rs.	608	6	0

Revenue

Current year's expected revenue (Cash Rs. 66—4—0) (Balance „ 79—4—0)	Rs.	145	8	0
Suspension due to Locust and Insect attack this year ...	„	347	8	0
	Rs.	493	0	0
Remission of Rs. 60 due to uncultivated lands	„	60	0	0
	Rs.	553	0	0

Expenditure

Hukkadars		—	nil	—
(Due to				
Deshmukh	Rs. 20			
Deshpande	„ 16			
Sar Patil	„ 10			
Chitnis	„ 18			
Kaji	„ 1			
Naikwadi	„ 1)			
Towards *Subha* account ...		Rs.	12	0 0
(Abaji Mahadev, Clerk	Rs. 6			
Phadnis	„ 5			
Muzumdar	„ 1)			

Village Expenses:

(Kulkarni's pay...	Rs.	12	0 0
Stationery	„	3	0 0
Cart hire for boat	„	3	0 0
Artillery	„	3	12 0
Cart hire	„	1	8 0
Charity	„	3	8 0
Waghya of Jejuri	„	1	0 0
Shimga festival...	„	8	8 0
Wani's account	„	31	0 0
Naro Deshpande	„	4	0 0
Khando Gopal	„	1	0 0
Commission for money bag	„	3	0 0

Annual expenditure (incurred but not paid) Rs. nil

Provision to Kamavisdar ...	Rs.	40	0 0
Chitnis	„	2	0 0
Ghee...	„	2	0 0
Presents	„	2	0 0
Account of Mahal	„	30	0 0
Patadar Godse	„	4	0 0
Village Joshi	„	3	0 0

CHAPTER IV.

Vegetation, Crops, and Cultivation of the Village

The land is the real and permanent capital in an agricultural village anywhere, but this is far more the case in a Deccan village than is the case in western countries. The land is much more nearly in its unimproved condition. There are no fences except temporary ones put up to protect special crops. Drains do not exist. Roads are tracks and nothing more. There are certainly a certain number of embankments, a few wells, one or two water channels, the village houses, and the agricultural stock. But these form a far smaller proportion to the unimproved value of the land than is usually the case elsewhere. And hence a detailed study of what the unimproved land produces without or with cultivation and of what it is capable of producing is a matter of even greater importance here than almost anywhere else. We will discuss as in our previous study the subject under the following headings:—

A. The Trees of the Village.
B. The Herbaceous Vegetation of the Village.
C. The Implements used for cultivation, etc.
D. The Crops of the Village.
E. The Rotations of the Village.
F. to *M.* The Several Important Crops grown.
N. General Summary.

A. The Trees of the Village

Bare treeless rocky hills or undulations are the characteristic of all the black cotton soil areas of India, and as a result there is no part of India on the whole more uninviting to the passing stranger. And this village being composed of what is on the whole a poorer soil than is usual in the trap area, is certainly no exception to this general condition, but is rather worse than most of the country in the point of treelessness. Almost the only tree which seems to flourish naturally is the *babul (Acacia arabica),* and this forms by far the greater part of the tree vegetation of the village.

The total number of trees is 1761 or only 0·71 per acre. Of these 1515 are *babul* trees or 86 per cent of the total. This tree is generally found on the banks of the river or of the *nalas.* Except in two cases where there are 160 trees and 200 trees respectively in two survey numbers, these *babul* trees are distributed over all the suitable places in the village. They are all natural, for few people ever plant a *babul* tree. They may be carefully preserved when they grow, but the seeds either fall directly on the ground and germinate, or else they are carried by goats who eat the green pods of the trees and void the seeds in the dung.

Though there are such a large number of *babul* trees, only 110 of these are of large size fit for cutting for timber or 7·2 per cent, 639 are of medium size (or 42·1 per cent) while the rest are small and at present useless trees. Small bushes have not been included. The reason why large trees are not more common is that in a treeless country like that round Jategaon the *babul* is too valuable to be allowed to grow to full size, and before they reach this stage are generally cut to make imple-

ments, to repair carts, to make fences, or to serve some other village purpose.

Next to the *babul* the most frequent tree is the mango, and of this there are 86 examples in the village, or about 5 per cent of the total number of trees. All are old. There has been no attempt to plant new mango trees for many years. Mango trees are valuable. The fruit is always in demand even when inferior, and a tree is worth at least Rs. 2-8-0 per annum to its owner. When old the wood is valuable, and a good mango tree is worth money at every stage.

The only other tree occurring in any numbers is the *nim (Melia azidirachta)* of which there are 71 specimens or about 4 per cent of the total number. This is again one of the few trees that seem naturally to flourish on trap soils in the Deccan. The remaining species of tree are very few in number, and are shown in the following list:—

Tree	Marathi & English name	Number in village
1. *Fruit Trees*		
Zizyphus jujuba	*Bor* or jujube tree	46
Tamarindus indica	Tamarind or *chinch*	11
Eugenia jambolana	*Jambul*	4
Feronia elephantum	*Kavat* or wood apple	3
2. *Ornamental or other trees*		
Pongamia glabra	*Karanj*	5
Melia Azedarach	*Bakan*	4
Ficus religiosa	*Pimpal*	3
Cordia myxa	*Bhokur*	3
Ficus bengalensis	*Banyan*	2
Ficus Tsiela	*Pimpri*	2
Capparis divaricata	*Pachunda*	2
Ficus glomerata	*Umber*	1
Ailanthus excelsa	*Maharug*	1
Prosopis spicic era	*Savandal*	1
Michelia champaca	*Chapha*	1

These trees are almost exclusively on the village site and along the lines of *nalas* and the *pat*, with the exception of the *bor (Zizyphus jujuba)*. This last seems to spring up anywhere and is never planted. The other trees are those usually found in the Deccan, and it will be noted that the list is very similar to, though shorter than, that given for Pimpla Soudagar. We are treating the orange orchards separately, but apart from these there are few fruit trees of value. The tamarind and mango are the most important. With the value of the mango we have already dealt. The produce of each tamarind tree will not be overvalued at Rs. 2-0-0 per annum. Thus we get an annual value of Rs. 259 to the village on account of the produce of these two species of tree. The other fruit trees cannot be considered as of any appreciable value. The *bor* (as it occurs here), the *jambul* and the *kavat* are all poor fruit of little importance. Of the good fruits there are none,—no figs, no pomegranates, no guavas, no plantains. All the existing trees are old, and (except for the orange gardens to be described later) there has been no energy directed to planting trees, either for fruit or anything else, for many years.

B. Herbaceous Vegetation

In our previous study we described at some length and in some detail the wild plants which we found in a Deccan village west of Poona. These numbered 126 species: in the present case with a poorer soil and a more precarious climate the number is very much less, and the species collected only number 55*. A list of these will be found in the appendix, but the frequency of their occurrence is indicated in the following list:—

* We owe a deep debt of thanks to Mr. R. K. Bhide, Assistant Economic Botanist to Government of Bombay, for both collecting and identifying the plants in the village.

Plants noted as very common	20 species.
Plants noted as common	27 species.
Plants noted as rare	8 species.

We will only speak here of a few of these which have considerable economic importance. The list of these is in part similar to that given for Pimpla Soudagar, though on the whole it is more different than one might expect. The plants which we consider deserve special note, principally as serious weeds of cultivation, are the following:—

1.	*Ischæmum pilosum*	*Kunda*
2.	*Cynodon dactylon*	*Hariali*
3.	*Panicum isachne*	*Shimpi*
4.	*Celosia argentea*	*Kurdu*
5.	*Commelina bengalensis*	*Raya kena*
6.	*Commelina Forskalii*	*Gwatya kena*
7.	*Cyanotis axillaris*	*Vichka*

The first two of these are grasses, which form perhaps the worst weeds of cultivation on unirrigated black soil in the Deccan everywhere. They chiefly occur on the richer black soils, and on these materially increase both the cost and difficulty of cultivation. As we have remarked before, the life of a Deccan cultivator is one long battle with *hariali* and *kunda*. The third weed in the list is another grass, common on all types of soil in the village.

The fourth weed in the list, *Celosia argentea*, deserves more than a passing mention. It is an annual weed abundant in very poor soils often covered with stones, where the *bajri* mixture, to be afterwards referred to, is usually grown. It grows abundantly with very little rain, and often stands higher than the crop. A distant view of *bajri* on such land often looks like a field of this weed, and it is the most troublesome and serious weed of these poor soils, in the part of the Deccan in which this village lies.

The last three weeds are those which are specially found on land devoted to *rabi* cultivation. On such land they grow abundantly, and every harrowing collects a heap of these weeds. They all belong to one natural order (*Commelinaceæ*) and they are characteristic of this and similar villages in this part of the Deccan.

C. Implements for Cultivation

The present village is, so far as implements are concerned, typically a self-contained unit, probably on account of its distance from a town, from a railway station, or even from the main road (2½ miles). The two roads which communicate with the last are fair weather tracks passing through fields belonging to private owners, and there is no good cart road. All these causes have combined to keep the old self-contained position of the village intact. Most of the village servants are still to be found in this village working for the people as *balutedars* (see below), and among them is the village carpenter and smith, who make and repair the implements required by the community. In this village these two essential duties are combined in the hands of one family, which at the present time consists of three brothers who act as smiths and carpenters as well. They are among the most energetic people in the village, who not only do this duty, but are also among the best cultivators, doing intense cultivation and growing sugarcane under well irrigation. This fact illustrates the common occurrence of men who are artisans and cultivators at the same time.

The ploughs and carts kept in the village are, from the records, as follows, at different dates:—

	Small ploughs	Large ploughs	Carts
1886-87	34	52	21
1891-92	39	34	28

	Ploughs	Carts
1896-97	44	28
1897-98	31	28
1901-02	44	24
1906-07	33	22
1911-12	26	21
1917	55 wooden 6 iron	30

Exactly what is meant by 'small ploughs' and 'large ploughs in the earlier years of the above record we do not know. The present type of wooden plough consists of a medium size Deccan plough capable of being driven by three or four pairs of bullocks according to the nature of the soil. But one of the most striking improvements in the agriculture of this village in recent years is the introduction of modern iron ploughs in large numbers here and in the surrounding villages.

The introduction here has been brought about by the action of several shopkeepers at Talegaon Dhamdhere, who after seeing the class of work these ploughs would do, opened large depots where they are kept on hire. There are not less than nine hundred such ploughs kept in depots in this neighbourhood. They are all manufactured by Kirloskar Brothers. This is a local firm in the Satara district who make a plough on the model of one of those (C. T. 2) made by Ransome, Sims and Jefferies of Ipswich, with modifications. These are hired out at a rate of 2½ to 3 annas per day for each plough according to the season. Sometimes they are rented on a monthly basis at Rs. 4-8-0 to Rs. 5-0-0 per month. The hirer makes his own arrangements to transport the plough to his village and to return it to the depot five miles away at Talegaon. He is also made responsible for any breakage or loss of parts, and has to make this loss good when he pays the hire charges.

Ten or twelve years ago these ploughs were unkown: now the major portion of the village is annually ploughed by their means. Six enterprising cultivators of the place have bought these ploughs on their own account, and not only use them, but make some money by hiring them to their fellow-villagers.

The rapidity with which these ploughs have been adopted makes it clear that the Deccan cultivators are by no means slow to adopt improvements and make innovations when they see advantage in doing so. The idea of the extreme conservatism of the people is, we are convinced, a myth.

The advantages of the iron plough, according to the people, are three. The first is the fact that it does better work and that with it the whole area is surely ploughed, whereas with the old country plough much of the land might remain, unwittingly, hard and unmoved. The second is that it needs less bullock power to do work at a similar depth*. And the people say that it has caused the disappearance of locusts as a pest of the crops. How far this last contention is really the case we cannot be sure. But from 1780 onward, locusts have occasionally been a troublesome pest and there are records of remissions of revenue by the Peshwa on this account; since the advent of the iron plough and the more thorough cultivation it gives, it is said that they have given no trouble.

The experience in the case of iron ploughs indicates how the presence of a number of tradesmen in a rural market can be utilised in the introduction of a genuine agricultural improvement. Once show the people that a new implement, a new manure, or a new seed is of real value, and the experience in the neighbourhood of Jategaon Budruk indicates that the already existing local tradesmen have enough enterprise and capacity to bring about

* This has been denied in the last settlement report of the Sirur Taluka (1909) para 11, but there is no doubt that it is a fact.

its adoption, and can do so more effectively than any Government or other agency. If the same enterprise, skill, and attention to business can be secured by means of a co-operative society, so much the better,—but hitherto except in relatively few instances the members of co-operative societies in the Deccan have not usually shown either skill enough, or sufficient attention to business to make such societies generally a really good agency for the purpose.

Apart from the iron ploughs the following implements are found in the village:—

Wooden ploughs—	55	or 0·48 per cultivator.
Harrows, large and small	— 84	or 0·74 per cultivator.
Seed drills	— 77	or 0·68 per cultivator.
Interculturing implements	— 151	or 1·32 per cultivator.
Carts	— 30	or 0·26 per cultivator.

Now it is usually considered that a cultivator should have one plough with yoke, one harrow, one seed-drill, and two interculturing implements at least. Out of the total number of 114, forty-nine cultivators (43 per cent) have such a complete set. The remainder have to depend partially on their neighbours.

Most of the above implements are locally prepared chiefly from *babul* wood which can be had in the village itself or close by. The costs paid in 1917 were as follows:—

	Price of wood	Wages	Total cost
	Rs.As.P.	Rs.As.P.	Rs.As.P.
Plough with yoke ...	10-0-0	1- 8-0	11-8-0
Harrow	2-0-0	0- 8-0	2-8-0
Seed-drill	3-8-0	0-12-0	4-4-0
Interculturing hoes (two)	2-8-0	0- 8-0	3-0-0
Cart			60-0-0

The other smaller implements required by a cultivator

cost little, and are either prepared in the village or bought from the local bazaars. Their whole cost did not exceed Rs. 2-12-0 in 1917. Thus in 1917 apart from the iron plough and the cart, a cultivator could completely equip himself with the implements required for his work for about Rs. 24. At present the village is paying about Rs. 300.- per annum (or Rs. 2-10-0 per cultivator) to tradesmen at Talegaon for the hire of iron ploughs.

D. Crops of the Village

The actual crops cultivated in the ordinary *ryotwari* Deccan villages are recorded with considerable care, originally in the village itself by the village accountant variously termed the *kulkarni* or the *talati*. These are now checked by higher officials (circle inspectors), and the figures within fairly close limit may be relied upon. The table given on the opposite page shows what this cropping has been at various dates since 1886-87.

We will deal with each of the more important of these crops or mixtures of crops separately later on, but there are certain points about these figures which command considerable interest.

The fallow area represents, in a village like this, the assessed area (that is to say the area supposed to be worth cultivating) which is not under crop. This includes, according to the revenue returns, (1) true fallow, that is to say customary fallow in rotation, (2) grass lands, that is to say lands set apart for grass and never sown, (3) grass bound or prickly pear lands, (4) land unsown owing to unseasonable or deficient rainfall, and (5) land left unsown for miscellaneous reasons. Now the total of these (with the exception of No. 4) is fairly constant. Thus for the whole taluka* the average for 1908-09 to 1910-11 (four

* Settlement report, 1919.

AREA OF CROPS IN JATEGAON BUDRUK

	1886-87	1896-97	1897-98	1901-02	1906-07	1910-11	1911-12	1913-14	1914-15	1915-16	1917-18	1918-19	1919-1920
	acres	acres	acres	acres	acres	acres	acres	acres	acres	acres	acres	acres	acres
Nett area under crop	2222	1264	2152	1945	2176	1930	1786	1896	1920	2105	2092	60	1995
Fallow	49	1007	119	325	94	340	484	374	350	106	182	2212	277
Area double cropped	68	96	—	10	53	54	24	62	49	73	100	16	20
Grain Crops													
Rabi jowar	15	177	746	333	84	499	268	43	61	703	900	6	350
Kharif jowar	—	7	—	—	—	21	49	49	51	40	25		
Bajri	177	1071	737	1224	1589	937	1207	1350	1250	974	855	13	1212
Wheat	18	25	177	40	45	80	10	116	72	88	90	—	117
Rala	—	—	11	5	8	2	—	4	5	3	5	—	—
Rice Barley or Maize	—	1	1	—	—	—	2	—	—	1	—	21	—
Pulse Crops													
Tur	90	10	2	10	177	38	73	124	126	82	35	—	71
Gram	21	10	106	30	12	33	3	10	25	32	100	—	50
Matki	186	—	81	40	107	45	49	106	126	77	30	—	49
Kulthi	15	—	68	85	93	63	70	108	121	74	35	—	64
Mug and *Udid*	—	—	—	15	66	147	—	10	26	6	—	—	6
Vegetables, Garden Crops and Plants	—	7	12	5	1	2	2	1	7	7	22	28	20
Chillies	1	1	3	1	4	10	4	2	2	3	2	3	4
Safflower	8	1	21	9	3	49	25	8	25	48	60	—	40
Sesamum	—	—	5	1	15	15	15	15	15	15	5	—	—
Niger seed	—	—	—	1	6	3	5	2	15	6	5	—	—
Groundnut	—	15	11	5	4	5	5	4	25	7	2	—	1
Ambadi	—	—	25	10	11	5	15	7	15	7	6	—	5
Sugarcane	—	15	4	—	—	5	5	—	2	6	10	2	½
Cotton	—	—	—	—	4	25	—	—	—	—	—	—	—

years) and 1911-12 (which was a bad year) only differed as follows:—

1908-09 to 1910-11... ... 24,600 acres.
1911-12 ... ... 23,400 acres.

On the other hand the item No. 4,—the land unsown owing to unseasonable or deficient rainfall increases nearly seven times its previous value in the bad year quoted. The figures are:—

1908-09 to 1910-11 ... ... 8,600 acres.
1911-12... ... ... 56,900 acres.

If these figures are correct for the village we are studying, we may take any increase in fallow beyond the current amount which prevails in what are known to be good years, as due to the unseasonable or deficient rainfall, and to be to a certain extent a measure of the badness of the seasons.

Let us take, in fact, in the figures quoted in the attached table 1906-07 with 94 acres of fallow and 1915-16 with 116 acres of fallow as good years, and hence say 110 acres of fallow as the average normal in a good year. Let us take 1896-97 as almost the worst year on record, and as the standard of badness (100) with which to compare others. We should then find that in the years quoted we should have as follows:—

1897-98 — A satisfactory year.
1901-02 — 21% as bad as 1896-97.
1906-07 — A satisfactory year.
1910-11 — 23% as bad as 1896-97.
1911-12 — 37% as bad as 1896-97.
1913-14 — 26% as bad as 1896-97.
1914-15 — 24% as bad as 1896-97.
1915-16 — A satisfactory year.
1917-18 — 7% as bad as 1896-97.
1918-19 — The worst year on record: twice as bad as 1896-97.
1919-20 — 18% as bad as 1896-97.

In the years quoted, therefore, judged by this method, the season was satisfactory from an agricultural point of view in three years out of eleven, was under ten per cent as bad as the worst year on record before 1918-19 in one year out of eleven, was between 18 and 30 per cent as bad, in five years out of eleven, was between 30 and 40 per cent as bad in one year out of eleven and was hopelessly bad in one year out of the period chosen.

If we are to use these figures we must know something of what they mean. This is perhaps given by the proportion of years in which the full revenue assessment can be collected and this can be found in Appendix V to the Settlement Report previously quoted. From this and more recent information, we find that in all the years mentioned above since the present rules were in force, except in 1918-19, it has been possible to collect the full land revenue, and that in the ten years from 1904-05 to 1913-14 it was possible to collect the full revenue in six years, half of it in two years, and none of it in two years. An increase in the area unplanted on account of season *by more than one-third the amount in the worst year on record* (except 1918-19) does not mean that land revenue cannot be collected. The conditions must be worse than this, and such conditions occurred four times out of ten years. This gives a measure of the precariousness of the tract.

There is another test of the precariousness of a village which, unfortunately, is only available for the last five years. This is the anna-valuation of the crops made each year on the responsibility of the Mamlatdar of the taluka, either in both *kharif* and *rabi* seasons, or in one of these according to the character of the village. In the present village it is only made, as a rule, in the *kharif* season. This anna-valuation is supposed to represent the proportion of a full normal average crop (12 annas) in the village in question which is growing in the particular year. It is, therefore, a measure of the variation of

the crop from year to year at least, though its value for more than this has been much questioned. The records are only kept now for three years, and so it is impossible for us to go back beyond 1915-16. The figures since that date are:—

1915-16	10 annas
1916-17	10 annas
1917-18	7 annas
1918-19	Nil (there was no crop except on irrigated land)
1919-20	6 annas

If we count the crop of 1915-16 and 1916-17 as that which a cultivator has a right to expect, we may put the probability that he will get it at 40 per cent. The probable crop in any year is not more than 66 per cent of that which a man has a right to expect in a good year. In this village, therefore, all the economy of the village should be based not on a *normal* crop, but on one of two-thirds of this amount.

The area which is double-cropped indicates the intensity of the cultivation of the village. In this village all this land must be under some sort of irrigation, except in the case of gram after *bajri*. And the general tendency is to increase, though it varies very much indeed. The area in 1917-18 is, however, the largest on record.

The actual crops grown, while on the whole very constant in the main lines, tend perhaps to become more varied. There is really, however, very little change in the past twenty years. Let us consider the classes of crops before discussing them individually.

The grain crops of the village of Jategaon vary considerably in relative area from year to year, and what they are in any one year seems chiefly to depend on the exact character of the rainfall in that season. There are really three available crops in any year. The first is the *bajri* crop, either alone or mixed with others as will be

described later on, which must be planted in June or early in July if it is to be a success. Much of the land is suitable for no other crop; if the sowing season goes by without the necessary favourable rains, then the land remains unplanted and remains as fallow. There is, however, much other land which may grow *bajri* or, if it is not planted on account of unfavourable rain, may still grow *rabi jowar* in September if conditions are favourable. Most of this is planted with *bajri* by preference, but the *rabi jowar* crop is the second alternative if the August and September rain is satisfactory. Again, if on this latter class of land the chance of growing *rabi jowar* fails, there is still a third alternative. If the late rains in September and early October are sufficient, then this deeper better land is prepared for and planted with wheat. So that a large *bajri* crop means good June rains: a large *rabi jowar* crop means that there have been poor rains in June, but fairly good ones in July or August and the early part of September; a large wheat crop means that conditions have not been favourable for the planting of either *bajri* or *rabi jowar*, but that the later rains in September or the early part of October have been more or less satisfactory.

We can illustrate this from the records for a number of years.

Rainfall	1886-87 inches	1897-98 inches	1906-07 inches	1915-16 inches	1917-18 inches
May and June	5·56	2·10	11·44	9·66	5·13
July	2·81	2·85	2·54	6·04	0·79
August	1·41	1·61	8·80	1·34	2·35
September	1·93	8·78	2·70	9·45	5·33
October	13·03	5·16	0·12	0·67	4·89
Crops	acres	acres	acres	acres	acres
Bajri	1771	737	1589	974	855
Rabi Jowar	15	746	84	703	900
Wheat	181	177	45	88	90

These figures will show to what extent the weather is the determining factor as to what grain shall be grown. A year with much *rabi jowar* means that the *kharif* rains have been poor, or that they have not allowed an opportunity for *bajri* sowing. A year with much wheat means that there has not been a satisfactory opportunity to sow either *bajri* or *rabi jowar*, or both, on the better land. With these facts in view the following table which gives the proportion of the total grain area under each of these crops, will reveal at once the character of the season in each case.

	Per cent of Grain Area occupied by			
	Bajri	Jowar	Wheat	Other grains
	%	%	%	%
1886-87	90·1	0·8	9·1	...
1891-92	96·7	3·3	...	...
1897-98	44·1	44·7	10·6	0·6
1901-02	76·5	20·7	2·5	0·3
1906-07	92·1	4·8	2·5	0·6
1910-11	61·0	33·8	5·2	...
1911-12	78·6	20·6	0·7	0·1
1913-14	86·5	5·8	7·3	0·4
1914-15	86·9	7·6	5·0	0·5
1915-16	53·6	41·0	4·8	0·6
1917-18	45·6	49·3	4·8	0·3

There has thus been no progressive change in any direction here: the proportion in any year seems a function solely of the weather in that season.

So far as the pulse crops are concerned, which form such an important section of the village cultivation, it will be noticed at once that the *tur* or pigeon pea, whose area is usually the greatest, is a complement of the *bajri*, and that the *matki* and *kulthi* are also constituents of the *bajri* mixture so largely grown in the village, — and to be

dealt with later. The only other important pulse crop is gram which in the majority of cases is a second crop grown after removing *bajri*. Needless to say this only applies to the better land.

The other crops will be dealt with in connection with their cultivation, with that of the mixtures of which they form a part.

E. The Rotations and Mixtures of Crops grown

If we take the record of crops of the last few years, we get very interesting information about the rotations and mixtures commonly cultivated in this village. It will be seen from the tables given that *bajri* occupies by far the most important position and the largest area among grain crops. But its real importance would be better understood if the area under the so called *bajri* mixture were taken. For several recent years the area under this mixture is as high as 76 per cent of the *nett* cultivated area.

The *bajri* mixture contains several leguminous crops, and hence can be grown year after year without affecting the fertility of the land to any great extent. As a result there is little of ordinary rotation practised.

Out of two hundred and seventeen cases of rotation with *bajri* mixture examined, we found the following variation:—

(1) In 96 cases *bajri* mixture was sown year after year or in 44 per cent of the cases,

(2) in 75 cases *bajri* mixture was followed by *shalu* jowar, or in 34½ per cent of the cases. This will be usually on the better land,

(3) in 35 cases *bajri* mixture was followed by fallow, or in 16 per cent of the cases,

(4) in 6 cases *bajri* mixture was followed by wheat or in 2·8 per cent of the cases examined. This will, again, be only on the better land, and

(5) in 5 cases *bajri* mixture was followed with *gram*, or in 2·3 per cent of the instances taken.

Shalu or *rabi jowar* is never found year after year in the same field. It either alternates with *bajri* mixture or is followed by a fallow year. Out of ninety cases, in seventy-five (83 per cent) it was followed by *bajri* mixture, while in twelve cases (13 per cent) it was succeeded by fallow. This fallowing often lasted here for two or even three years. In the remaining instances *jowar* was followed by wheat (4 per cent).

The rotations of wheat were peculiar. Out of forty eight different cases examined, in twenty, wheat was a second crop after *bajri* mixture in the same year. In these cases the wheat was irrigated. In six instances it grew on land which had borne no crop since the *bajri* mixture of the previous year, while in the remainder it was followed by ground-nut, *udid*, gram, *rabi jowar*, or fallow in the succeeding year. Wheat was, therefore, followed by

(1)	*bajri* mixture	in 54 per cent of cases
(2)	ground-nut	in 29 per cent of cases
(3)	fallow	in 6 per cent of cases
(4)	gram	in 2 per cent of cases
(5)	udid	in 2 per cent of cases
(6)	wheat	in 2 per cent of cases

F. Bajri and its Mixtures

The village of Jategaon Budruk is essentially a *bajri* producing village, as will be seen from the figures indicating the areas occupied by *bajri* and its mixtures. This is so, partly on account of the character of the rainfall, but also as a result of the nature of the soils,

which are poor, shallow, and hungry, capable of growing a better crop of this grain than of *jowar* or wheat. In the year when the crop was relatively smaller than in any on record (1897-98) it still occupied 44·1 per cent of the total grain area. But as a rule, when the early monsoon rains are not very deficient, the area under *bajri* varies from 61 to over 96 per cent of the total grain area of the year.

But even this does not indicate clearly the real importance of the crop in the village. It is never sown alone, but always mixed with one or more pulses and several other seeds. Hence we must take into account the area occupied not by *bajri* alone, but by mixtures of which *bajri* is the chief constituent. The following table represents these areas in a series of years.

	Area under *bajri* mixtures. Acres	Per cent of the total cropped area. Per cent
1886-87	2062	93
1891-92	2204	97
1896-97	1082	86
1897-98	908	43
1901-02	1437	74
1906-07	2064	95
1910-11	1253	65
1911-12	1433	80
1913-14	1725	91
1914-15	1693	88
1915-16	1200	57
1917-18	970	46

Average for these years—1502 acres. As the total cultivable area is 2271 acres, the extent to which these mixtures monopolise the cultivation in certain years is obvious.

The special feature of the *bajri* mixture in this village is the very large number of seeds which are mixed with

bajri before sowing. At the sowing season of 1917 samples of the mixtures as they were actually being sown in the field were taken and examined. The seeds sown are stated to vary according to the soil. Almost all the people carefully measure their seed before sowing, and the size of a man's holding is often in common cultivation, stated in terms of the amount of seed which it will require for sowing. The mixture is sown with a three coulter drill, and at the same time a fourth row is sown either with *tur* or *kulthi* according to the nature of the soil.

The mixtures actually sown in 1917 were as follows:—

	No. 1 %	No. 2 %	No. 3 %	No. 4 %	No. 5 %	No. 6 %	No. 7 %	No. 8 %
Bajri	75·8	74·5	74·7	78·0	72·5	71·8	64·8	52·2
Matki ...	16·6	12·5	16·5	2·8	15·0	15·9	21·6	—
Nilwa Jowar	9·6	9·0	7·0	9·7	10·0	10·6	—	11·6
Kulthi ...	0·4	0·5	—	7·0	0·2	—	13·1	30·7
Ambadi ...	—	0·3	1·8	1·2	1·6	2·0	0·5	0·8
Sesamum ...	—	—	—	0·8	0·2	0·7	—	2·8
Niger seed .	0·6	—	—	0·5	0·5	—	—	0·9
Tur	—	2·9	—	—	—	—	—	—
Udid	—	0·3	—	—	—	—	—	—
Crop in the fourth row	*Tur*	*Kulthi*	*Kulthi*	*Tur*	*Tur*	*Tur*	*Tur*	*Tur*

Thus the proportion of *bajri* in the mixture sown in three out of the four rows varies from 52·2 to 78 per cent. Where the proportion is very low, the soils are exceptionally poor and covered with stones. The most common mixture in the village is, however, 4 seers of *bajri*, ¾ seer of *matki* or *kulthi*, ¾ seer of *nilwa jowar*, ¼ seer of *ambadi*, with a handful of sesamum and of niger seed. These are measured on the field and then mixed up thoroughly and sown.

Apart from the supposed advantage of these mixtures in the special soil conditions of this village, there is little doubt that it is in part a relic of the former economic independence of the village unit in the Deccan. The custom not only supplies grain and pulse, but oilseed from which oil could be obtained, and fibre for village use from the *ambadi*. *Nilwa jowar* is added to yield fodder for the working cattle. None of the pulses, the oilseeds, or the other constituents of the mixture are ever sown as independent crops. Though the former economic independence of the village is, we believe, the real reason for growing such a large variety of crops together, other reasons are given for it by the people, and of these the following is a summary.

(1) The rainfall is very precarious, and its distribution is also very uncertain. To face this situation a mixture is sown whose demands for moisture are different. Some can withstand heavy rain, others require only light showers, while again others can stand long breaks in the rain. Hence one or other of the constituents of the mixture will probably do well. In practice it is a fact that whenever the crop of *bajri* is good, the crop of pulses is poor: whenever the *tur* does well the *matki* and *kulthi* are unsatisfactory, if the *kulthi* is good the *tur* and other crops will be inferior, and so on.

(2) The land is mostly very poor, and it is hence not possible to follow a system of rotation. Hence, the mixture, which answers, in part at any rate, the same purpose, is resorted to.

(3) The various crops used in the mixture do not ripen, ready for harvest, at the same time. Hence the work of harvesing is distributed over a long period, and there is not a very great pressure of work at one time. *Bajri* ripens in three months, then comes *nilwa jowar* which is ready in three and a half months. *Matki* and *kulthi* can be cut in four months, and at the same time sesamum,

niger seed, and *ambadi* are harvested. *Tur* is the last to be reaped and this remains on the land for five months.

As these *bajri* mixtures form the chief crop of the village, a good deal of care and attention are given to their cultivation. The land is, nowadays, always ploughed with the iron plough, and Kirloskar's plough No. 100 is universally used here. The ploughing season extends over a long period, — from November to May. As a rule the ploughing requires four pairs of the local bullocks, and as most of the cultivators do not possess so many, there is a general resort to a system of copartnership for ploughing, sowing, harvesting or any other operation which requires a good deal of labour, either from bullocks or men.

This type of co-operation is in general practice in this part of the Deccan in similar villages. If there are, say two cultivators, each of whom possesses two pairs of bullocks, they would plough the lands of both with the combined bullock power. The man actually employed on the work gets his food and his bullocks' food from the partner in whose fields he is working. This kind of co-operation is known as *sawad-karne*.

An acre is usually ploughed in a day and a half, the soils being very light over most of the area normally put under the *bajri* mixture. Large clods are not generally produced, and often, in fact, *murum* or decomposed trap is turned up. Some time after ploughing the land is several times harrowed,—generally from four to eight times,—the number of times varying with the time and the bullock power available. Half the total number of harrowings are usually given in the hot weather before the rainy season commences, and the remainder after the first rains have come. These latter harrowings remove the weeds and tend to retain the moisture in the soil.

Land for *bajri* is not usually manured every year, but it receives from four to six cartloads (3000 to 5000 punds) of farmyard manure per acre once in three or four years.

When it is added the manure is mixed with the soil at the time of the hot weather harrowings. On the whole the preparation gives a soil in excellent tilth when the sowing time arrives.

Sowing is by preference done in the first or second week of July. During the year when most of the present study was made (1917) there were practically no rains till the last week of July, and hence the sowing was late, and only the shallower soils were ready for sowing. The heavier soils had not enough moisture to become soaked enough. The result was that little more than half the usual area was sown under the *bajri* mixture in that year. The quantity of the *bajri* seed mixture put into the land was about 5½ pounds per acre, and, in addition, 2½ pounds of *tur* or *kulthi* is sown in the fourth row. The light harrow is worked after the drill to cover the seed. An acre of land was sown in about three hours.

The seed used is generally selected and reserved from the previous year's crop. When, however, *bajri* has to be obtained from outside, it is by preference obtained from villages to the west of Jategaon and never from further east. The seed is generally preserved by first mixing with wood or cowdung ashes, and then placing it in earthen vessels closed with mud. The seed actually used varies very much in quality and in germination capacity. Tests made with a number of samples of seed actually being used, gave the following results on germination.

	Number of samples examined	Lowest germination %	Highest germination %	Average germination %
Bajri	13	53·5	89·0	72·7
Matki	11	65·0	94·0	87·0
Kulthi	6	82·0	96·0	88·8
Tur	4	52·0	73·0	65·5

From these figures it will be seen that the nature of the seed supply is far from satisfactory, in spite of the care given to it by the cultivators. An improvement in this direction is urgently required.

In a village like the present, there are, of course, a certain number of people who take little or no care to preserve seed, and who are at the last moment compelled to purchase seed at the nearest market. If they have cash to do so, fairly good seed can be obtained in this way, but, if not, they are supplied by a shopkeeper either at the village or elsewhere, on agreement to return one and a half times or even twice the amount of grain at harvest. This is the usual rate charged for accommodation of this sort.

The crop is cultivated twice, with the small bullock hoe, between the rows when it is three or four weeks old. Two of these hoes are attached to one pair of bullocks, and two men can thus deal with two acres of land per day. After this there is no further treatment except watching and bird scaring. One woman can watch about four to five acres of the *bajri* crop.

The *bajri* crop is harvested in October with a sickle, spread out on the ground for a couple of days for drying and then tied in bundles which are stacked in a large heap in the field. The other crops now grow faster, and ripen one after the other and are similarly harvested in succession. *Tur* benefits in particular by the removal of the *bajri*, and spreads much at this stage.

The threshing yards are prepared by hardening the soil under the feet of bullocks and then plastering it with cowdung and earth. Threshing is done under the feet of bullocks, and winnowing by the wind in the usual Deccan fashion. No improvements in these matters have hitherto been introduced. If *bajri* is wanted for use before the crop is threshed, it is obtained by threshing by hand with a log of wood.

The outturn of *bajri* over the greater part of this village is extremely low as compared with that obtained on better soil near Poona. The figures given were ascertained in 1917 by personal threshing of the grain from ten bundles in each of a number of fields. The number of bundles per acre varied from 150 to 300. Taking the average as being two hundred, and the average yield per ten bundles at six pounds, we find that the outturn per acre is 120 pounds of grain and 240 pounds of *bajri* straw. The anna valuation* for the *kharif* crop in 1917 was 7, and this is rather higher than the average anna valuation for the last five years and may, therefore, be taken as the normal outturn.

In addition to this quantity of *bajri* grain and straw, an acre produces on the average from a crop of *bajri* mixture

Tur	—	30 pounds
Kulthi	—	15 pounds
Matki	—	15 pounds

and very small quantities of sesamum, niger seed, ambadi, and nilwa jowar.

Thus the average outturn per acre of land, of grain of any kind, is 180 lbs. which is, of course, extremely low. The cultivators themselves place it at about this figure, and consider that an average yield would be 120 pounds of *bajri* grain, and 60 pounds of other grains per acre.

It is possible, in our opinion, to increase the yield of the crop at present under consideration by giving attention to several factors in cultivation. The most important of these is the reduction in the weed herbage. In a large number of fields we found weeds flourishing exceedingly and more luxuriantly than the crops themselves, growing taller than the *bajri*. On stony soils *kurdu (Celosia argentea)* is a perhaps the most troublesome of these. On

* We deal with the question of anna valuation on pages 63 and 64.

the better types of soil *kena (Commelina)* is equally troublesome. The two interculturings are not sufficient to eradicate these, and both weeds are absolutely useless, being refused as a fodder by cattle except in the last extremity. A little more interculturing with an improved hoe would probably go a long way to check both these weeds.

The following table indicates the income and expenditure in 1917 in connection with the crop of *bajri* mixture for an acre. It shows a nett profit of Rs. 4-12-0 per acre to a cultivating farmer. If labour had to be paid for, as by a capitalist employer, there would be an actual loss of Rs. 1-6-0 per acre.

	With hired labour			With cultivator's own labour		
Expenditure.	Rs.	As.	P.	Rs.	As.	P.
(1) Seed (8 lbs.)	0	7	0	0	7	0
(2) Manure (not counted)		—			—	
(3) Labour cost (animals & men)						
a) One ploughing	4	2	0			
b) Four harrowings	2	0	0			
c) Sowing and Covering	0	14	0	5	12	0
d) After-cultivation	1	4	0			
e) Watching	1	0	0			
f) Harvesting, threshing, etc.	2	10	0			
(4) Assessment	0	12	0	0	12	0
Total	13	1	0	6	15	0

Income.

Value of	Rs.	As.	P.
(1) *Bajri* grain (120 lbs. per acre at 18 lbs. per rupee)	6	11	0
(2) *Kulthi* and *Matki* (30 lbs. per acre at 20 lbs. per rupee)	1	8	0

	Rs.	As.	P.
(3) *Tur* pulse (30 lbs. at 20 lbs. per rupee)	1	8	0
(4) *Bajri* straw (200 bundles at 12 annas per 100 bundles)	1	8	0
(5) Other produce	0	8	0
	11	11	0

At the same cost for labour and prices as in 1917, and taking the anna valuation as a correct measure of the variation of crop the nett returns per acre on each of the last five years to a capitalist farmer (*i.e.* with hired labour), and to a working cultivator will be as follows:—

	Anna valuation	Nett return with hired labour	Net return with cultivator's labour
		Rs. As. P.	Rs. As. P.
1915-16	10 annas	+ 3 10 0	9 12 0
1916-17	10 annas	+ 3 10 0	9 12 0
1917-18	7 annas	— 1 6 0	4 12 0
1918-19	nil	nil	nil
1919-20	6 annas	— 3 0 0	3 2 0

Of course these are not actual returns, as prices have varied and for any material not wanted for food, which could be sold, a higher return would be obtained in the later years. But they indicate clearly the character of the return obtained, and will, of course, be absolutely comparable, if the whole of the grain is required for the consumption of the cultivator and his family.

G. Rabi Jowar and Safflower

Next in importance so far as area is concerned is the crop of *rabi jowar* in the village. This is almost always grown mixed with safflower, and the area of the mixture in different years is as follows:—

	Jowar	Safflower	Total area under mixture
	acres	acres	acres
1886-87	15	8	23
1896-97	177	2	179
1897-98	746	21	767
1901-02	333	9	342
1906-07	84	3	87
1910-11	499	49	548
1911-12	268	25	293
1913-14	43	8	51
1914-15	61	25	86
1915-16	703	48	751
1917-18	900	60	960
1919-20	350	40	390

As already described, these extraordinary fluctuations are simply due to variations in the way in which the rain falls. If this is suitable for the *bajri* mixture, the latter is preferred, if not the next alternative is to grow *rabi jowar* with safflower. The preparation of the land for this mixed crop is nearly the same as that for the *bajri* mixture already described. The land is usually ploughed with the iron plough during the hot weather. From four to six harrowings follow, most of them being in the monsoon months to keep down weeds and to increase moisture, and to maintain the tilth required. Manure is not regularly given, but this land receives its share of the farmyard manure once in three or four years.

The *jowar* mixture contains six to ten per cent of safflower, and is by preference sown at the beginning of October. The seed is generally preserved from the previous year. When it has to be bought, it is obtained from the villages to the *east* of Jategaon. This is the opposite of the policy persued with regard to *bajri*. The mixture is usually made by taking four seers of *jowar* seed and mixing a quarter of a seer of safflower seed

with it and sowing. The actual proportion in the mixture as sown is from 90 to 94 per cent of *jowar*. The mixture is sown with the four coultered drill and covered after sowing as usual. Three weeks later the land is hoed between the rows with a bullock hoe.

The seed used gave germination varying from 73 to 97 per cent, with an average of 80·1 per cent. This cannot be considered as in any way satisfactory. The safflower seed was better, with an average germination of 94·7 per cent. The crop may suffer from heavy rain in November, as was the case in 1917, and from *kani* or smut. Though the latter can be easily kept in check by soaking the seed in solution of copper sulphate, no precaution has hitherto been taken. The people were ready enough to try the proposed remedy when it was pointed out to them.

There is, however, one way serious trouble which is common to almost all the crops, but which may be dealt with here. This is the prevalence of numerous flocks of deer over all this part of the Deccan which do very serious damage to the crops from germination to maturity. In spite of their timid character, they are not afraid of the cultivators. All attempts to scare them away by watching, or by noisy devices on the fields, or by scarecrows seem to have little effect. The question of damage by deer in the eastern Deccan is one which has not hitherto been regarded seriously enough.

The crop of *jowar* is harvested by uprooting it in February, and is allowed to dry in the fields for a few days, tied in bundles, stacked, threshed under the feet of bullocks, and winnowed in the usual way. The crop of safflower remains on the field longer, and is harvested early in March, and threshed by hand with a block of wood, and then winnowed. The threshing of safflower is often paid for in kind, one seer of safflower seed being paid for every twelve seers threshed.

The usual outturn of *jowar* and safflower per acre is put by the people at 120 pounds of the former and 30 pounds of the latter. To show how the season may cause these quantities to vary, we may say that numerous tests in 1917-18 gave as an average of under 90 pounds of *jowar* and no less than 60 pounds of safflower per acre. The former was considered as about three-quarters of a normal crop, the latter was looked upon as an abnormally good one. The average outturn of *jowar* straw is about 300 pounds per acre.

The following table indicates the income and expenditure on what may be considered as an average crop. It shows an average return of Rs. 6-0-0 per acre to a working cultivator or Re. 1-0-0 if hired labour is employed.

	With hired labour			With cultivator's own labour		
Expenditure.	Rs.	As.	P.	Rs.	As.	P.
(1) Seed (5½ pounds)	0	4	0	0	4	0
(2) Manure						
(3) Labour cost (animals and men)						
a) One ploughing	4	2	0			
b) Four harrowings	2	0	0			
c) Sowing and covering	1	2	0			
d) After-cultivation	0	10	0	5	12	0
e) Watching	1	0	0			
f) Harvesting, threshing, etc.	2	10	0			
(4) Assessment	1	0	0	1	0	0
Total	12	12	0	7	0	0

Income.

Value of	Rs.	As.	P.
(1) *Jowar* grain (120 lbs. at 20 lbs. per rupee)	6	0	0
(2) Safflower seed (30 lbs. at 30 lbs. per rupee)	1	0	0
(3) *Jowar* fodder (150 bundles at Rs. 4 per 100)	6	0	0
	13	0	0

H. WHEAT

Wheat occupies the third place among the crops of the village. The area, however, is subject to enormous fluctuations varying from ten acres in 1911 to over 180 acres in 1886-87. We have already stated the chief cause of these very large variations, as being the suitability of the rainfall for the growth of *bajri* or of *rabi jowar*. A second reason which is given is that a good wheat crop can only be expected if the *kharif* rains have been good, and if throughout the rainy season, the soil has become thoroughly soaked and has remained so. It is, as already stated, purely a question of the character of the rain that determines the wheat area, and there has been no general decline in recent years such as we found to have occurred in Pimpla Soudagar.

The only soils on which wheat is planted are the richest in the village. All these are very nearly level and consist of medium black soil. All of them are valued, in the revenue survey, above eight annas (see page 18), and most of them between eight and twelve annas. They are assessed at between thirteen annas and one rupee three annas per acre.

The manner of preparing land for wheat cultivation is similar to that used for *rabi jowar*, but as the tilth has to be specially good, as many as eight harrowings are often given. Two or three of these are given before the monsoon, and the remainder after the rains set in, whenever the condition of the soil permits of the operation.

The crop is usually sown in the early part of October, but it can be put in during most of this month. The sowing is done with the four coulter drill, and the seed covered with a light harrow. A small quantity, not more than two to three per cent, of safflower seed is usually mixed with the wheat before sowing.

There are two varieties of wheat grown, one termed *khapli* and the other *bakshi*. Both are obtained locally, and the seed by our tests was excellent. It is usually kept from season to season mixed with ashes in earthen vessels closed with mud. The seed rate varies from twenty-four to thirty pounds per acre. The crop is usually sown across the field in both directions, the drilling being first done lengthwise of the field and then again crosswise. Manure is not given regularly, and only four to six cart-loads of farmyard manure is applied to wheat land once in three years or so. No interculturing is given to the crop, in fact, on account of the method of sowing this appears almost impossible. The principal enemies of the crop are the large flocks of deer in the neighbourhood. At the time the wheat is growing the grass is dying all over the neighbourhood and naturally the animals are attracted to the wheat fields.

The crop is ready to harvest in February and is harvested by cutting close to the ground with a sickle. It is then tied into bundles, stacked, and threshed with bullocks at a convenient time. The outturn usually obtained is from 240 to 300 pounds of wheat grain and about 24 to 30 pounds of safflower seed per acre. This is, it must be remembered, from the best land in the village, and cannot be considered as in any way a satisfactory yield.

The following may be considered an average balance sheet for the crop, on the bases of wages and prices of 1917, when working with hired labour, and when the cultivator supplies as much as possible of the labour himself.

	With hired labour			With cultivator's own labour		
Expenditure.	Rs.	As.	P.	Rs.	As.	P.
(1) Seed (30 lbs.)	2	8	0	2	8	0
(2) Manure	1	8	0	1	8	0
(3) Labour cost (animals & men)						
a) Ploughing	4	2	0			
b) Harrowings	2	0	0			
c) Sowing and covering	1	8	0	5	12	0
d) Other operations, harvesting, threshing, etc.	2	0	0			
(4) Assessment	1	2	0	1	2	0
Total	14	12	0	10	14	0

Income.

Value of	Rs.	As.	P.
(1) Wheat grain (240 lbs. at 15 lbs. per rupee)	16	0	0
(2) Safflower seed (30 lbs. at 30 lbs. per rupee)	1	0	0
(3) Wheat straw...	1	0	0
	18	0	0

This leaves a nett profit of Rs. 7-2-0 per acre for a cultivating farmer or Rs. 3-4-0 per acre for a capitalist employer of labour. It must be remembered in this case, however, that the profit with wheat is a cash receipt as it is not used in an ordinary year largely for food and is hence sold.

I. Gram

The next crop which is invariably present in Jategaon is gram. In the majority of cases it is a second crop grown in the richer lands of the village after removing the crop of bajri. In some cases it may be grown as a

rabi crop on an area not cultivated in the *kharif* season, but which has borne jowar or wheat in the previous year.

Much of the land immediately to the east and south of the village site is very good and being near the village gets regular manuring. It is on such land that gram is grown as a second crop. The soil requires no special preparation in this case. After the bajri crop is harvested the land is harrowed once and then sown with gram. The seed rate is from 24 to 30 pounds per acre. It is covered after sowing in October and then gets no further attention till harvest.

Where gram is sown as a single crop, the land receives the tillage usual in preparing for *rabi* crops, described in the case of *rabi jowar*.

The harvesting of gram is done by uprooting the plants, and it is threshed by hand by means of a stick, and winnowed with wind in the usual way. The average outturn is 240 pounds per acre.

An actual statement of accounts (when cultivated as a second crop) in connection with what would be an average outturn is given below, using both prices and wages of 1917 as a basis.

	With hired labour			With cultivator's own labour		
Expenditure.	Rs.	As.	P.	Rs.	As.	P.
(1) Seed (30 lbs.)	2	0	0	2	0	0
(2) Manure	1	8	0	1	8	0
(3) Labour cost (animals & men)						
a) Harrowing once	0	10	0			
b) Sowing and covering	1	2	0	1	2	0
c) Harvesting, threshing, etc.	1	8	0			
(4) Assessment*	...			...		
Total	6	12	0	4	10	0

*No assessment is charged as it is considered that this has been paid by the previous crop.

Income.	Rs.	As.	P.
Value of gram (240 lbs. at 15 lbs. per rupee)	16	0	0
Total	16	0	0

There is thus a nett profit of Rs. 11-6-0 per acre to the cultivating farmer and Rs. 9-4-0 per acre to the employer of labour, taking the conditions of 1917 as the standard.

J. Sugar-cane

Of all irrigated crops, sugar-cane is the favourite of Deccan cultivators. Whenever water is available and land in any way suitable, an energetic cultivator is sure to do his best to put part of his land under this crop. Our investigations were made in 1917 under conditions very favourable to the extension of the area under cane, and hence the acreage was larger than it had been for twenty years. The rainfall of 1916 had, in fact, been exceptionally good, there being heavy late rains as well as good early rain. Hence the wells were well supplied with water, while the village *nala* ran freely throughout the hot weather of 1917. Hence irrigated crops were planted, the chief of these being sugar-cane, though sweet potatoes and other garden crops were freely grown.

The total area, even this year, was only 10 acres, but it was a striking increase on what may be considered normal for the village. Out of this area, one acre was irrigated with water brought by a channel from the *nala*, the rest was supplied with water from the wells.

The method of planting sugar-cane under well irrigation in the Deccan is so well known that it is hardly necessary to describe it in detail.* Suffice it to say that the crop is manured heavily before planting with fifty or sixty cartloads (40,000 to 50,000 lbs.) of farmyard manure

* A full account is given in Mollison's Text Book of Agriculture, Volume III. and in Bulletins of the Bombay Agricultural Department.

per acre. No manure is used as topdressing. 18,000 sets are put in per acre being obtained from adjoining villages. Watering at first is frequent, irrigation being given before planting, three days later, and then again after four days. After this, water is applied at intervals of from seven to ten days until the rains, and again after the rains are over. When water by flow is available it is customary to give it more frequently than when it has to be lifted from a well. The normal outturn is from 3000 to 4800 pounds of *gul* per acre.

The following is a balance sheet of this crop on the basis of prices and wages of 1917:—

	With hired labour			With cultivator's own labour		
Expenditure.	Rs.	As.	P.	Rs.	As.	P.
(1) Seed (18,000 sets at Rs. 5/- per 1000)	90	0	0	90	0	0
(2) Manure (54 cartloads)	81	0	0	81	0	0
(3) Labour cost (animal, & men)						
a) Ploughings (3)	12	6	0			
b) Harrowing and levelling	1	0	0			
c) Planting & preparing beds	6	8	0	9	12	0
d) Weedings (3)	12	0	0			
e) Earthing up	6	4	0			
f) Waterings (30 at Rs. 5-4-0 each)	157	8	0	90	0	0
g) Harvesting and preparing *gul*	60	0	0	60	0	0
(4) Assessment	1	12	0	1	12	0
Total	428	6	0	332	8	0

Income.	Rs.	As.	P.
4800 pounds of *gul* at Rs. 20 per palla of 240 lbs.	400	0	0

On the basis of these figures it will be seen that unless the cultivator works himself the crop will not pay at the prices of 1917. If he does so (as is the case from which these figures were taken) and has to lift the whole of the water required, he would in 1917 make a profit of Rs. 67-8-0 per acre. If use could be made of flow irrigation from the *nala* or of from any similar source, the profit would be very largely increased, as the cultivator could do all the work required himself. At least Rs. 75 additional profit per acre must be added in this case, or a total of Rs. 142-8-0 per acre in 1917. On the whole, under the conditions of 1917 we shall not be far wrong in calculating an average nett return of Rs. 80 per acre from sugar-cane to the cultivator in Jategaon.

K. Sweet Potato

The crop of sweet potato seems to be another favourite of this place especially. The area under this crop in 1917 was considerable, 10 acres. The whole area was under well irrigation.

The land for this crop is ploughed with the iron plough in September or October. Farmyard manure is then spread on the land to the extent of about forty cartloads (32,000 pounds) per acre. A second ploughing is now given with the wooden plough which mixes the manure. The breaking up of clods and the levelling of the land is then done with the head piece of the harrow. After this, the wooden plough is used to open up furrows at a distance of about eighteen inches apart. The land is then divided into square beds, 7½ by 7½ feet in size.

Water is now turned on to these beds before planting. The cuttings, which are nine inches long and are locally obtained, are then planted half way up the ridges and on both sides of the ridge. These are sold at a high price, and the cuttings necessary for planting an acre, cost

Rs. 90. The first watering is given five or six days after planting and then every tenth or twelfth day.

A month after planting the first weeding is given and another at the end of the second month. Two months after planting the stems are raised up to prevent rooting. The crop is ready for harvest in 4 to 4½ months.

The accounts for this crop on the basis of prices and wages in 1917 are as follows:—

	With hired labour			With cultivator's own labour		
Expenditure.	Rs.	As.	P.	Rs.	As.	P.
1. Seed-cuttings	90	0	0	90	0	0
2. Manure:—40 carts @ Rs. 1½ per cart	60	0	0	60	0	0
3. Labour cost (animals & men)						
a) Ploughings (two)	8	4	0	6	0	0
b) Harrowing and levelling	1	0	0	0	12	0
c) Preparing beds and planting	6	8	0	1	0	0
d) Weeding and earthing up	9	0	0	...		
e) Waterings 10 @ Rs. 3½ each	35	0	0	20	0	0
f) Harvesting by digging ...	30	0	0	...		
Total	239	12	0	177	12	0

Income.

Value of	Rs.	As.	P.
1) Outturn of sweet potato per acre. 26 pallas equal to about 7800 pounds sold at 32 pounds per rupee	243	12	0
2) The stubble from an acre	15	0	0
	258	12	0

This leaves a nett profit to a cultivating farmer of Rs. 81 and only Rs. 19 to a capitalist.

L. The Orange Gardens

Two features of the village we are considering indicate that in spite of the unfavourable physical conditions under which it is placed, some, at least, of the people retain energy and ambition. The first, to which we have already alluded, is the recent increase in the number of wells and in their use: the second is the recent development of fruit cultivation under well irrigation which has shown itself in the extension of orange gardens here, in imitation of the very successful fruit gardens in the adjoining villages of Shikrapur and Talegaon.

The cultivation of oranges has only been recently introduced, and is of course the result of its success elsewhere near by. But it needs a fairly large investment without return for five years, and demands an absolutely assured supply of water. The climate is certainly suitable. No less than six of the cultivators have gone in for this cultivation, all since 1914-15, and the following figures of area show the way in which this has increased

	acres	guntha*
1914-15	0	20
1915-16	1	20
1917-18	5	0
1918-19	7	33
1919-20	9	23

To those who are accustomed to fruit-planting on a capitalist scale these figures may seem small, but as an indigenous enterprise on the part of the village people it is important. Similar developments are taking place in surrounding villages wherever there are wells which give an assured supply of water. The ambition to have an orange garden has, in fact, been one of the main inducements to the people to dig out and deepen their wells.

* A *guntha* is one-fortieth of an acre.

The cultivation of oranges is recognised to require a good deal of skill, and is usually undertaken with the advice of owners of orange gardens in the neighbouring villages where gardens have been long established (Shikrapur and Talegaon). The grafts required for planting are prepared by and obtained from the older gardeners.

The soil must be rich and retentive, but well drained, Medium black soils with *murum* subsoil are quite suitable for the purpose. The preparation of the land must be very careful. It is ploughed three times either with the iron plough or with the country plough so that deep rooted weeds and grasses may be entirely removed. If necessary, hand-digging is resorted to for this purpose in addition. After all this, the land is harrowed several times, and from five to ten cartloads of manure applied per acre and thoroughly mixed with the soil.

The grafts ready for planting, purchased as above described from adjoining villages, are generally from two to two and a half years old; and are sold at from four to five annas each. Shallow pits are then made at nine or ten feet apart in both directions, and the grafts planted. They are watered every day for the first six months, and then 40 cartloads (30,000 lbs.) of farmyard manure are applied per acre, and thereafter waterings given every week instead of every day.

A year later the garden is hand dug, and a similar quantity of manure is applied. Beds are then prepared for irrigation, two plants being contained in each bed, and water is given every week. Four hand-weedings are given in the course of the year. During the third, fourth, and fifth year of the orchard this treatment is repeated. If flowers are produced in the fourth year they are at once removed, as they are supposed to injure the bearing capacity of the plant later.

From the fifth year a crop is obtained regularly. In Deccan there are three flowering seasons or *bahars*,

but the trees are only allowed to bear once each year. The *bahars* are (1) in June the fruit being ripe in the following March, (2) in October the fruit being ready in June, and (3) in February, fruits being produced in October or November.

The system of management is, for an established garden, five years or more old, either to be taken on lease for a year by an old gardener, or to be cultivated by the owner, the fruit on the trees being sold to a contractor for the Poona market. In the case of one garden in the present village, the fruit of the garden, six years old, was sold for Rs. 200, the area being half an acre. This is equivalent to about a gross return of Rs. 400-0-0 per acre. An established garden was expected in 1917 to give a money outturn for the fruit on the trees of Rs. 500-0-0 per annum each year.

The expenditure on such a garden up to the time it is established, at Jategaon would be as follows in 1917:—

Expenditure	With hired labour			With cultivator's own labour		
1st year.	Rs.	As.	P.	Rs.	As.	P.
1. Grafts (500)	150	0	0	150	0	0
2. Manure (46 cartloads)	69	0	0	69	0	0
3. Labour cost						
a) Ploughing (3)	12	6	0			
b) Harrowings (6)	3	0	0			
c) Making pits and planting	6	4	0	11	4	0
d) Weedings (4)	12	0	0			
e) Watering*	175	0	0	115	0	0
f) Hedging	4	0	0	1	0	0
4. Assessment	1	4	0	1	4	0
Total 1st year's cost	432	14	0	347	8	0

* Including cost of *mhot* and ropes.

..	With hired labour			With cultivator's own labour		
2nd year.	Rs.	As.	P.	Rs.	As.	P.
1. Manure (40 cartloads)	60	0	0	60	0	0
2. Hand-digging	20	0	0	—		
3. Weeding	12	0	0			
4. Watering*	135	0	0	90	0	0
5. Assessment	1	4	0	1	4	0
Total 2nd year's cost	228	4	0	151	4	0

3rd, 4th and 5th years.

The expenditure in each year is the same as in the second year, and thus, in total amounts to

1. With hired labour Rs. 684 12 0
2. With the cultivator's own labour „ 453 12 0

The whole capital cost of the garden until it is bearing substantially will, therefore, be

1. If hired labour is employed Rs. 1344-10-0 per acre,
2. If the cultivator's own labour is used „ 951- 4-0 per acre.

As a result of this expenditure it is expected that the orange orchard will give an annual gross return of Rs. 1-8-0 to Rs. 3 per tree, the fruit being sold on the tree. This should, therefore, bring at least Rs. 675-0-0 per acre, and deducting the annual necessary expenditure of Rs. 151-0-0 and about Rs. 48-0-0 for watching (making a total of Rs. 199-0-0) the nett return to a cultivator who does his own work will be Rs. 476-0-0 per acre. This is charged with interest on Rs. 1000-0-0 per acre, or at least Rs. 100-0-0 per annum and probably more,—and so yields an actual nett return, if all goes well, of Rs. 376-0-0 per acre. Even a capitalist would obtain a

*Including cost of *mhot* and ropes.

nett return after allowing for current interest (but not for interest during the growth of the garden) of Rs. 265-0-0, if all goes well.

So far there has been little to interfere with getting this return, and it is probable that in such well drained soil as occurs in Jategaon the people will avoid the great evil of many gardens in the Deccan,—the occurrence of salt and the consequent ruin of the trees.

M. Other Crops

We need hardly refer to any of the other crops, generally grown on a very small scale, sometimes on fractions of a *guntha* by the fancy of an individual cultivator. Chillies, sometimes onions and sometimes potatoes are grown in this manner for home consumption. If we look to the record of crop areas, it will be seen that attempts have been made to introduce new crops. Cotton was one of these, and in two separate years it was put out on four acres and on twenty-five acres respectively. It was not a success, and the people do not think their soils are good enough for cotton. Ground-nut was another case, and the crop at one time occupied twenty-five acres, but fell to two acres in 1917. We believe that in this case, in a year of good *kharif* rainfall, ground-nut ought to be a success. There are no further points of interest in connection with these minor crops.

N. General

Having considered the various crops grown in the village, we may now attempt to make an approximate calculation as to the *nett* return which the whole land of the village may be expected to give to a working cultivator. As almost the whole cultivation of the village is done by such working cultivators and labour is only

employed when it must be, the amount so calculated will be a very fair measure of the actual profit which, in 1917, the people of the village might be expected to get if they sold the whole of their produce, and then bought back at the same rate what they needed for their own use.

We are of opinion, that 1917 may be taken as a fair average year in this village. In two out of the last five years the crop has been greater and the nett return of the *kharif* non-irrigated crops at any rate, would be considerably higher (see page 63-64), but the present represents as much as the people can expect to get, according to the probabilities as shown in the last five years. Judged by the fallow area, the previous five years were at least equally bad,—and so the figures for 1917 will be at least not below the average for ten years. In only two years out of the last ten would they, in fact, have been materially greater.

The actual results of our calculation for 1917-18 are as follows:—

CROP	Area	Profit per acre			Total profit to village
	acres	Rs.	As.	P.	Rupees
Bajri mixture	976	4	12	0	4,635
Jowar and Safflower ...	989	6	0	0	5,934
Wheat	90	7	2	0	641
Gram	100	11	6	0	1,137
Sweet Potato	10	81	0	0	810
Sugar-cane...	10	80	0	0	776
Orange (½ acre in fruit) ...	5	410	0	0	205
Vegetables (Chillies, onions, potatoes, etc.)...	12	20	0	0	245
	2192				14,383

This gives an average profit per acre of cultivation in the village of Rs. 6-9-0, if we include the exceptionally

large areas under sugar-cane and sweet potatoes. This area was, of course, due to the unusually good rains in the latter months of 1916. If these be excluded the average nett return per acre on the village will be Rs. 5-12-0 per acre on the basis of the prices of 1917.

One more calculation might be interesting. We have already said that only on two occasions in the last ten years have the crop condition been materially better than the above figures show, namely in 1915-16 and 1916-17. If we take the anna valuation as correctly representing the relative value of the crops in these years, we may get an idea as to the maximum return obtainable in the village taking the prices of 1917 as the basis. Such a calculation for 1915-16, indicates a *nett* return of Rs. 24,255, or Rs. 11-2-0 per cultivated acre. The figure is given with much hesitation and diffidence, and it must be recognised that it is only reached in two years out of ten.

It is clear from this consideration of the cropping in the village of Jategaon Budruk to what an extent the cultivation is a gamble in rain. The precariousness of the rainfall is the factor which tends to destroy energy, to take away initiative, and to prevent progress, and yet these are the conditions which prevail over hundreds if not thousands of similar villages in the Deccan to the east of Poona. If better cultivation is undertaken, better returns will be obtained, — if only the rain is seasonable and satisfactory: otherwise it may be labour lost. The most astonishing feature in this village is that the people have not more completely lost their energy than is the case. Unlike what we found in the village of Pimpla Soudagar, they are still digging wells, still planting fruit trees, still extending (whenever the season allows) the area under irrigated crops. Of course in some directions more can be done with profit, in the way, for example, of eliminating weeds, plant pests, or crop diseases. And something has been done, if it is only the adoption of the

iron plough and the consequent removal of the locust pest in recent years; and more will be done when any feasible practice is recommended and introduced by those in whom the villagers have full confidence. But such progress is again hindered by the land conditions already discussed, which tend continually to prevent to an almost unrealisable extent the progress in agriculture which would otherwise certainly take place even here.

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CHAPTER V.

THE AGRICULTURAL STOCK OF THE VILLAGE

HAVING thus considered the crops produced in the village of Jategaon, we must now turn to the animals by whose aid they are obtained, and the other agricultural stock of the place. It can never be insisted on too much that most of the Deccan is not really a cattle country. The grazing almost everywhere is very poor, and though it is a country in which sheep and goats can find a living, cattle have either to be fed for a considerable part of the year or they half-starve, and at intervals of a few years there comes a famine and in tracts like the Sirur Taluka a large number die and disappear.

In the village we are now discussing there have been at different dates the cattle shown in the following table:—

	1886 -87	1891 -92	1896 -97	1897 -98	1901	1911	1917
Bullocks and Bulls	342	230	275	244	336	284	306
Cows	171	141	149	116	144	204	182
Calves	63	145	182	104	182	200	171
She-buffaloes	45	37	42	40	35	14	14
He-buffaloes	2	—	—	—	—	—	—
Buffalo-calves	15	8	25	16	29	15	11
Total Cattle	638	569	673	520	726	717	684
Horses of all kinds	14	11	16	10	15	14	8
Goats	160	315	210	176	140	247	97
Sheep	—	—	2	14	—	1	35

In addition to these there were in 1917 about eighty fowls in the village.

The cattle in this village have remained far more constant in number than might have been expected. The great famines of 1896 and 1900 have seemed to affect this village very little so far as the quantity of cattle is concerned, and the number in 1917 was a little greater than that in 1886-87.

The working animals, — that is to say the bullocks and also, to a certain extent, the bulls, — are well distributed among the people of the village. Out of the 147 families in the place, 111 had such working animals in their charge, and of these 94 families also possessed milk animals. Thirteen families possessed only milking animals. Thus 84 per cent of the village families had animals of some sort belonging to them in 1917. Most of the working animals were of the ordinary hardy hybrid Deccan type. There were, however, several *Malvi* and *Khilari* animals also. There is a pair of working animals for about each 15 acres of assessed area.

Milking Animals:—In April 1917, out of a total number of animals capable of producing milk, the following statement shows the number which were actually doing so:—

	TOTAL	Number in milk	Number Dry	Percentage of Dry Animals %
Cows	182	106	76	42·4
She-buffaloes	14	6	8	57·2

All the cows and she-buffaloes are of the ordinary Deccan breed, and the proportion of dry animals is very high indeed, higher indeed than we found in our former study at Pimpla Soudagar.

The yield of milk is very low, as is always the case with the Deccan breed both of cows and buffaloes. A cow in this village cannot be depended to give more than three pounds of milk per day after allowing the calf to

share, while the buffaloes are expected to give from five to six pounds of milk per day. The buffalo is always preferred as a milking animal.

All the milk in the village is utilised at home. In some cases, however, butter and *ghee* are prepared and sold at the markets of Shikrapur and Talegaon, respectively 2½ and 5 miles distant. The quantity, however, so prepared is very small. The composition of the cows' milk is shown by the following analysis:—

	Morning Milk %		Evening Milk %
Total solids ...	13·14	...	13·9
Fat	4·5	...	5·3
Solids not Fat .	8·6	...	8·6

Samples of buffalo-milk were also obtained for analysis, but they had been evidently adulterated before they came into our hands,—as is, in truth, nearly always the case.

Feeding of Cattle and Buffaloes:—The public grazing area is 157 acres, but the bulk of this is only a bare rocky area growing hardly any grass. Beyond this, the embankments placed between the different fields furnish a good deal of grass for grazing during the months from July to November. In places, the width of these bunds on the boundaries is no less than three feet, and being composed of actual soil, they often produce very good grass. It is the duty of one of the members of each family,—generally a boy or a girl, to accompany their cattle in the early morning, say at 4 to 5 a.m., to these bunds for grazing during the months already named. The girls and women in the families also go out and cut whatever grass can be got from the boundary embankments of every kind, or from the fields where crops are growing and bring these home for feeding the cattle. The life of a woman or a girl in a cultivator's household is, during these months, by no means an easy one. Thus for five months out of the

year, the cattle are fed on the green grass in the fields and on the boundaries, and to this is added a basketful of bajri husks, or about 2 pounds of *matki* grain in the working season. At other times the cattle subsist mainly on *bajri* straw or *jowar kadbi* or straw. The *bajri* straw generally goes to cows or buffaloes, while the *jowar kadbi* is given to working animals.

During the time when grass is not available, and only the very poorest grazing is to be found, the usual ration of a bullock is 5 bundles of *jowar kadbi*, 10 bundles of *bajri* straw, and one basketful of *bajri* husk (*bhuskat*). The character of these materials as used in the village is shown by the following analysis:—

	Jowar kadbi %	Bajri straw %	Bhuskat %
Moisture	4·25	4·00	5·30
Oil (Ether extract)	1·40	0·70	2·95
Albuminoids	2·87	2·87	10·90
Digestible Carbohydrates	40·08	46·23	49·20
Woody fibre	42·45	38·60	15·00
Ash*	8·95	7·55	16·65
	100·00	100·00	100·00
*containing sand	2·70	2·80	2·35

A cow is given one to one and a half pounds of *bajri* grain after calving, for some days. The grain is cooked before feeding. No concentrated foods are bought in the village; what is grown has to be sufficient for the cattle.

We are now in a position to see what the exact relationship of the village cattle to the economy of the place. They are needed, of course, but we have often been asked (1) as to whether these are not far too many cattle kept for the necessities of the village, and (2) as to whether the cost of the cattle is not greater than the benefit

derived from them. We can answer these questions from the data collected:

(1) Are these not far too many cattle kept for the necessities of the village?

So far as the milch cows are concerned we will say nothing. The milk they give is only a fraction of what the village might reasonably be expected to consume, and though if better cattle in point of milk were available, the milk could be produced at less expense, yet if such better milch cows are not available, such cows as are available must still be kept.

With regard to the working cattle, however, a fairly close estimate can be made of the needs of the village, and we find that the work to be done, both on the irrigated area and on the dry area in a normal year, requires 273 cattle if the ploughing, harrowing, and other agricultural operations are to be done well and at the proper time. If we count ten per cent of these in addition to allow for cattle which are not working owing to sickness or old age, we get a total of 300, as against an actual population of working cattle of 306 in 1917. It appears, therefore, that the cattle population, so far as working cattle are concerned, was in 1917 very close to what would be considered as the proper number for the village to possess if all the land at present utilised is kept in cultivation.

(2) Is the cost of the cattle greater than the value of the service and materials given by them?

In attempting to answer this question we have drawn up a balance sheet for one year of the cattle of the village, with the following results. We may say that in doing so we have charged manure and the milk at the price at which they could be obtained in Jategaon, and the work value of the cattle on the basis of the price for hiring of plough animals from one cultivator to another. The expenses suppose that the animals get grazing for six

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months in the year, and have to be fed, partly at any rate for the remainder. This is, in fact what actually happens in the village.

Income from Cattle	Rs.	As.	P.
1. Manure per annum	3,606	0	0
2. Milk from cattle and buffaloes per annum	8,085	0	0
3. Work value of 306 bullocks at 180 working days per annum	13,770	0	0
4. Value of 49 calves produced in the year, which live, at Rs. 3.-	147	0	0
	25,608	0	0

Expenditure on Cattle	Rs.	As.	P.
1. Expenditure on 182 cows for six months	2,739	0	0
2. Expenditure on 306 bullocks for six months	9,410	0	0
3. Expenditure on 14 buffaloes	203	0	0
4. Expenditure on all calves for six months	1,877	0	0
5. Depreciation in the sale value of all cattle @ 10%	2,124	0	0
6. Interest on present value of cattle at 12%	2,549	0	0
7. Loss of cattle through disease calculated at half per cent	109	0	0
8. Value of grazing (not calculated as it has no sale value)	0	0	0
	19,011	0	0

This gives a *nett* value of the cattle to the village per annum of Rs. 6597. If we count a calf as equal to half an adult animal, it means that each head of cattle is worth annually to the village Rs. 11. 1. This figure is rather

higher than we expected, and presumes that full advantage be taken of the manure of the animals.

Housing of the Cattle.—The special feature of this village as compared with villages in many parts of the Deccan is that almost all the cultivators have special sheds or byres for their cattle. But, more important even than this, is the fact that all these sheds are built outside the area occupied by the houses, though still in nearly every case in the *gaothan* or village site. In a few instances only are the sheds put into adjoining survey numbers, which are given to the cultivator for non-agricultural purposes such as the building of these sheds. This system of having separate cattle sheds is one which is not usual in the Deccan, and which might well be imitated. The usual objection to it is that it makes necessary a special watch being kept over them, but judging by the present case, this objection does not seem of very much importance.

Near the cattle sheds the fodder belonging to the cultivators is also stored, and often also the fuel, generally consisting of cowdung cakes made from the dung of the animals.

This leads us to consider the utilisation of the dung. A little under fifty per cent of the total quantity made is used for making cowdung cakes for fuel. Practically all the fuel in the village consists of this material, but in Jategaon they are not made for sale outside the village. The remainder, or more than half the total quantity, is put in manure pits close by the stables. These pits are kept very carefully and the manure is regularly used, primarily for the irrigated and garden cultivation, then for the wheat and *rabi jowar* on the better land, and finally for the shallower land carrying the *bajri* mixture as a *kharif* crop.

Value of the Livestock of the Village.—Nearly half the cattle present in the village in 1917 had been reared in the place itself, the rest having been purchased from the local market at Talegaon. At that time the price of a

medium-sized pair of Deccan bullocks was Rs. 110: it has risen considerably since then. Taking, as we have done throughout this study, the price of 1917 as the basis, the value of the livestock* in the village may be calculated as follows:—

1. Bullocks	—294	at	Rs.	50	per animal	— Rs.	14,700
2. Bulls	— 12	at	„	60	„	— „	720
3. Cows in milk	—106	at	„	30	„	— „	3,180
4. Cows, dry	— 76	at	„	10	„	— „	760
5. Calves	—171	at	„	8	„	— „	1,368
6. She-buffaloes in milk	— 6	at	„	50	„	— „	300
7. She-buffaloes, dry	— 8	at	„	20	„	— „	160
8. Buffalo-calves	— 11	at	„	5	„	— „	55
9. Horses & ponies	- 8	at	„	25	each	— „	200
10. Goats & sheep	—132	at	„	3	„	— „	396
						„	21,839

We should like to be able to present a statement with regard to the prevalent cattle diseases, the mortality from these and the remedies employed. But little information was available in the matter. In the case of the more serious epezootics nothing is done. With foot and mouth disease, tar or decoction of tobacco is applied to the sores, but with Indian cattle, foot and mouth disease cannot be regarded as a very serious trouble. The most frequent affections of the working cattle, as all over the Deccan, are wounds, and neck tumours as a result of the friction of the yoke.

Before passing away from the consideration of the livestock of the village, it will be important to realise the effect of the recent famine on the cattle in the place. The figures are very striking, and as this village was in a

* The value of the poultry is ignored.

tract very badly affected, they show what a really serious failure of rain is likely to do in this particular. The data were obtained in August 1919, after the drought was over.

	Bullocks	Cows	Buffaloes
Number in 1918	338	334	35
Sold during famine	14	10	3
Died during famine	202	269	26
Purchased after famine	56*	2	1
	178	57	7

Thus the famine of 1918-19 caused the direct loss *by death* of 59·7 per cent of the bullocks, of 80·5 per cent of the cows and of 74 per cent of the buffaloes. By January 1920, or six months later the number of bullocks had increased to 202, but there had been a further diminution of the remaining animals from 64 to 55. From these figures will be seen how slow the recovery from a year of serious drought and famine is likely to be in the matter of live-stock.

*27 of these were purchased from *tagai* loans.

CHAPTER VI.

The People of the Village

The whole of these enquiries culminates in a study of the economic condition of the people of the village, and the question which we have finally to consider is whether in a village unit like the present, the vast bulk of the people are really in a sound — and increasingly sound — economic condition or no. Do the people secure enough to provide for them at a scale which in the case of food is sufficient for their own standard of life, and in the case of other things, is enough to maintain their self-respect? To get an answer to these questions we must consider first the people themselves, and then their economic condition. The results at present are based on a careful house to house enquiry conducted in the hot weather of 1917. Previous to making this enquiry one of us had spent a considerable time in the village, and knew almost everyone personally, and we have, as a result, great confidence in the figures and results obtained.

The total number of families in this, for the Deccan, relatively small village, was 147, and corresponded with a total population of 736. Most of the people are Marathas. The Maratha families now in the village are in far the majority of cases the same as have lived there for centuries. We found, in fact, in the oldest available records, — those of 1698 — the same family names — Umap, Kulal, Pawar, etc. — as exist to-day. The remainder of the people, apart from the Maratha families, are nearly all village servants. There is one Marwari family of recent introduction, whose head is the village money-lender and shopkeeper, and is, for the present, the master of the village in a very special sense.

The families in the village may be classified according to caste as follows:—

Marathas	113
Brahmins	2
Marwari	1
Gurav or priest	1
Lohars or blacksmiths	3
Mahomedans...	3
Navis or barbers	4
Ramoshis or watchmen	3
Chambhars or shoemakers...	3
Mahars	14
	147

In accordance with the system prevailing throughout the Deccan, all the non-Maratha population except the Marwari, consists of those who are, in a more or less complete sense, village servants, who are entitled to some share in the crops grown, for services rendered to the people of the village. The work of each class is indicated above, except the case of the *Mahars*. These, as is well known, are the village messengers and general servants of the *patel* or headman of the village, for communal purposes. As we have stated elsewhere, they put up the tents of visitors to the village, carry money to the treasury, act as guides to strangers, clear away dead cattle and other refuse, and so on. For doing this they have their own land held under an *inam* tenure, and enjoy a portion of the *baluta* (see below) obtained from the land-holders and cultivators of the village. They also have a prescriptive right to the carcases of dead animals. The Mahomedans are butchers, and kill the goats required by the Marathas for food. They, therefore, receive a regular portion of the *baluta*, but in addition to this they are also cultivators. The *Ramoshis*, *Chambhars* and *Mahars*

are untouchable depressed classes,—the last two more so than the first. They live on the outskirts of the village, and will be described in more detail later.

The village, like all *ryotwari* villages is under the control of the *patel* or headman who is in charge of whatever happens in the place. He is responsible to Government and besides having *inam* lands, he also receives a small monthly salary. The office is hereditary. Formerly, under the Peshwa's rule the *Patel* had the right of sale of his office, and there is a very interesting instance of such a sale of half of the office in the present village in 1768*. The office of *patel* is now held by the three families of Umap, Kulal, and Holkar,—all of whom were concerned in the transaction of 1768, and a man is appointed to the office from each family in rotation, by Government,—one man occupying it for a period of ten years before being replaced. In most villages the *patel's* duties are divided, but in the present case, one man carries out the whole work of general control, and of keeping the peace and detecting crime.

The other hereditary village officer is the *kulkarni*, almost always a Brahmin as in this case, who was the village accountant and clerk. A reorganisation of the whole system of keeping village accounts has been made

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*The following is the account of this sale as given in the village records:—

"The account of the expenditure incurred for the transaction of the sale of half the right of *Patilki* and *Vadilpan* to Kusaji and Tulaji Holkar by Umap and Kulal Patils of *Mouje* Jategaon Budruk for Rs. 3000. The deeds were registered by the Government at the following cost:—

To the Government account

Rs. 800

Fees to Government *Karkuns*

Rs. 135 to the account of *Phadnis*

(Rs. 100, Nana Phadnis: Rs. 15 Krishnaji Pant, clerk, Rs. 20 Appaji Pant, clerk).

Rs. 100 to the account of *Chitnis*.

(Rs. 65, Mahipatrao; Rs. 20 Ramaji Baba; Rs. 15 Madhavrao)."

in the last few years, however, and the duties and pay attached to this hereditary office have been abolished. The work of *kulkarni* is now done by a regularly appointed and paid Government clerk, who is removable at the will of the authorities, and who acts for a group of villages. He is termed a *talati*, and in the present case he serves for three villages, resides in the adjoining village of Mukhai, and only visits Jategaon in connection with his work.

The total population as already stated was 736 in 1917, and of these 553 are Marathas or 75·1 per cent of the total. In giving data with regard to these and the rest of the population, we may say that in accordance with the plan adopted in our previous studies we have counted as men and women there who, on an approximate calculation exceed sixteen years of age. The people do not usually know their own age, and so the estimate is approximate. Those below the age of sixteen are considered as children. This age is taken because in the Indian social system, a young man, and especially a young woman, practically takes on the full duties of an adult at little more than this age, and, moreover, in calculating the requirements for living in the way of food and clothing we must, in any case, consider those older than sixteen as essentially adults. All married girls living with their husbands are counted as adults. Taking this limit the following is a statement of the people of the village:—

CASTE	No. of families	Total Population	Men	Women	Boys	Girls
Marathas	113	553	161	191	136	65
Brahmins	2	6	2	3	—	1
Marwari	1	10	4	3	3	—
Gurav (priest)	1	6	3	—	3	—
Lohars (smiths)	3	26	7	8	6	5
Mahomedans	3	20	2	6	4	8
Navi (Barber)	4	20	5	4	6	5
Ramoshi (Watchman)	3	8	3	4	1	—
Chambhar (Shoemaker)	3	18	3	7	5	3
Mahars	14	69	17	22	18	12

In the present case we can compare our figures in 1917 with those at several previous dates at any rate so far as the general population is concerned. The figures are as follows:—

	1886	1891	1901	1911	1917
Men	229	237	341	339	207
Boys...	130	147			182
Women	256	275	366	346	248
Girls	125	145			99
Total ...	740	804	707	685	736

It will be at once observed that there has been no steady rise or fall of the population. After 1891 when the maximum is reached there was a steady fall until after 1911, as a result probably of the successive famines during that period. A rise has now again occurred, bringing the population practically back to that of 1886. Now so far as we can make out the fall between 1891 and 1917 was not due to any epidemic. Plague or cholera have practically always left this village untouched. Nor is it due to a low birthrate so far as the evidence goes. We believe it is almost entirely due to emigration to the large centres like Bombay and Poona.

The people of this village have been in the habit of going to Bombay for work for the last twenty or twenty-five years, from the accounts given to us by the villagers. At the time of our enquiry nine families belonging to the village were away in Bombay, and about eleven others whose families were not away, had gone to Bombay or Poona. As a matter of fact, the population in 1917 would have been considerably less than we found it had it not been for the war. This had drawn a good many back to the village, on account of the fear lest, in Bombay or

Poona, they should be recruited as soldiers. From the families recorded as belonging to the village, nearly 200 people — men, women and children — were away in Bombay before 1916. Many of these used to go for part of the year — four to eight months — while a few settled in Bombay more or less permanently, only paying an occasional visit to their old home.

These who leave the village in this fashion do not sever their connection with the place. They still count themselves as belonging to it, return to it frequently, retain their rights in the land, and if they are asked as to their home, they will always name the village from which they come. Though resident in one of the large centres, some of them more or less permanently, some of them simply for a short time, they can so far in no sense be considered as in any way comparable with the landless proletariat of Europe. This being so, we have been interested to see how far the village derives financial advantage from their work in Bombay or elsewhere. As to the amount of money actually brought back, we have of course no information, but the postal authorities have been kind enough to furnish us with the amount remitted to the village by money orders during a period of two years. This amounted to only Rs. 900 or at the rate of Rs. 450 per annum. Counting the *nett* amount actually brought home by returning workers from the towns as reaching an equal amount it means that the village benefited to the extent of Rs. 900 per annum from its members who are away. This total is very much guess work, though we fancy it is not far from the truth—and if true, it indicates that the amount of money brought or sent to Deccan villages is very much smaller than is often supposed.

In connection with the question of population, the following data regarding births and deaths, will be of interest.

		1886-87	1891-92	1900	1914	1915	1916
Births	Boys	13	23	11	13	13	15
	Girls	17	20	18	16	9	24
Deaths	Males	5	11	18	5	17	8
	Females	5	22	15	10	8	11

This gives for the last three years, counting an average population of 720, a birthrate of 41·7, and a deathrate of 27·3. Of the deaths recorded 46 per cent were of children below the age of three years. This infant mortality seems appalling, and there is no medical help of any kind available in the village. The nearest dispensary is at Talegaon, five miles away, and little advantage is taken of that by the people of the present village.

Except for the very high infant mortality, the health of this village seems, however, to be very good, and the deathrate compares very favourably with that of the big towns with all their sanitary conveniences. The village has never been visited by plague, though this has raged very severely in the village of Shikrapur. Cholera is also very rare, and malaria is not the serious source of trouble that it is in so many villages. No treatment is usually given for malaria; very few people buy quinine from the post office.

The general good health of the village may possibly be due to the following causes, at least in part.

(1) There is, in this village, unlike most others, separate arrangements for housing the cattle apart from the houses of the people.

(2) During a large part of the year many of the cultivators live in the fields, especially in the harvesting season, in sheds erected temporarily for the purpose. This is a much more general custom in this village than in most of those on the Deccan.

(3) Almost all the houses in the village itself have a private walled compound — even though the house itself is poor and small.

As regards the population at the time of our inquiry, we may note that, as already stated, Marathas form 75·1 per cent of the people. Of the remainder, the depressed classes (*chambhars* and *mahars*) form 11·8 per cent, while all others together reach 13·1 per cent. The barbers and *lohars* may be classed with the Marathas, and if this is done, it brings the population of this class up to 81·3 per cent. Though the present village is, therefore, not such a clearly divided community as some, it is remarkably so, and we have

Brahmins and Priests (*Gurav*)	— 1·8 per cent.
Marathas and analogous castes	—81·3 per cent.
Depressed Classes and Ramoshis	—12·9 per cent.
Mohamedans	— 2·7 per cent.
Marwaris	— 1·3 per cent.

Except for the essential distinction between the depressed classes and the remainder, and the existence of the Marwari or village money-lender (who is at present the master of the village), the whole village is very homogeneous, and the caste system affects it little.

The number of members per household is exactly five, though owing to the constitution of the Indian households this does not enable us to conclude much with regard to the size of the families. The proportion of children is higher than in the village we previously studied, and when we take into account the fact that girls are usually married before the age of sixteen and hence count as adults, a proportion of 1·9 children per household is not perhaps very unsatisfactory. The data available do not however warrant a very definite conclusion on this point.

There is a decided excess of males on the whole population (389 to 347) which agrees with what we have

found elsewhere, but is hardly what we should have expected, in view of the fact that a number of men are away working in Bombay.

The housing conditions are better really than they appear from an examination of the houses themselves. Most of the houses are of stone (as would be expected where stone is so common) and are, as previously noted, usually enclosed in compound walls. There are, too, several public places which are used as sleeping places by the male population. Three good temples and one village *chavdi* exist, all of which are genuine public meeting places. People gather in the large temple of Maruti by day-time to discuss affairs, or for regular public meetings, and all the temples are regularly used as sleeping places.

The houses themselves are small. The average house area is not more than 196 square feet, the figures for each house being obtained by eye observations at the time of our visits. The variation is, however, great, as would be expected and as the following table shows:—

Size of House.	Number of this size.
Over 1000 square feet	2
With 500 to 1000 square feet	3
With 200 to 500 do.	36
With 100 to 200 do.	42
With less than 100 do.	64
	147

Labour.—As this village is so far away from business centres we get almost ideal agricultural conditions, under which every member of the village community is connected with agriculture or with occupations supplementary to it. Out of the whole people present there were four artisans, that is to say men who were definitely engaged for the whole of their time in skilled occupations other than agriculture. Two of these were stone-cutters, one was a bricklayer, and the fourth was a weaver engaged at about

five annas per day by another weaver in an adjoining village. Apart from these, the whole population are in whole or in part connected with agriculture, whether as whole or part time cultivators or as labourers.

There were seventy-one actual agricultural labourers employed by others and not cultivating their own land. Of these 53 were Marathas and 18 belonged to the depressed classes. Of these six were servants permanently employed. A few men (18) used their bullocks and carts to ply for hire on the roads during the off season when they were not required for ordinary purposes. The wages of a labourer in 1917 were usually six annas a day* when they were working outside the village but five annas a day in the village itself. Women were paid three annas a day, and were nearly all employed in the village. Artisans (bricklayers and stone-cutters) could in 1917 secure eight annas a day.

Total Income of all the Families of the Village.—With the material which we have collected in considering the crops, and with the result of our census in 1917 and intimate contact with the people for some time, we can now make a fair approximation towards ascertaining the whole income of all the families in the village. To do this the following points must be accepted.

1. The average return to a cultivating farmer, working himself on his land is taken as Rs. 5-12-0 per acre of cultivation. This average is obtained after deducting the area under costly crops like sugar-cane, sweet potatoes, or oranges. The income from such crops is added, however, to the individual farmers who are growing them.

2. We have assumed that a landholder who rents his land to a cultivator receives Rs. 2-12-0 per acre, and that

*Wages have gone up much since 1917. The effect of this rise on village economy is discussed in the next chapter.

a cultivator gets, on the other hand, Rs. 3 per acre. These are the average figures, after many enquiries.

3. The average wages of a labourer at the time of our inquiry in 1917 was six annas, and of a woman three annas. In the case of small cultivators who are not able to maintain themselves on their land alone, and who hence go out to labour, we have calculated the available time in the year for this labour at four months. Where carting is done, we have considered that four months per annum is available for this purpose for both bullocks and men, and that eight annas a day is then received by the man after providing for the bullocks.

4. There are several items of income which we have not credited to individual households, but have counted for the village as a whole. These are the returns from *babul* trees, and from mango and tamarind trees. These sources, without going into details, would, we calculate, bring in Rs. 615 per annum. No cowdung cakes are prepared for sale in this village.

With these assumptions, and with the figures we have got from our house to house enquiry, we found as follows:—

Total income for 147 families ...	Rs.	24,348
Income from *Babul* and fruit trees	„	615
Total	Rs.	24,963

This works out at Rs. 167-13-0 per family per annum; or an annual income per head of Rs. 33-12-0. The figures have been obtained by converting income from *baluta* (of which more later) into money value at the *nett* village rate, and that in each case it is income, when considered from the families own point of view.

The proportion of the income of the 147 families derived from land and from other sources is as follows:—

From land	Rs.	15,802
From other sources ...	„	8,546
Proportion from land ...	„	64·9 per cent.

The figure here given shows how different we are here from what one found in a village near Poona. In the latter only 37 per cent of the income came from land; here it is nearly double that proportion.

These figures are based on the returns in 1917, which we take as an average year at least during the last ten seasons. In a good year—which has only occurred twice in the last ten—the returns from land would be much higher (see page 95), but in a precarious tract like that round Talegaon such figures would give a totally false impression. By taking an average year,—and it was fortunate that the year of our inquiry was such,—we can come to some conclusion as regards the economic position of the people after a period of years.

Village Expenditure.—The village expenditure is much more difficult to calculate, and involves a consideration of the debts of the village, of the *baluta* system (or the system of paying for general village services), and of the standard of life among the people. We will attempt such a calculation, which it must be recognised, however, is only a first approximation.

Debts of the Village.—The total amount of indebtedness of the 147 families in the village in 1917 was Rs. 29,384. Of this Rs. 15,739 was on land security, Rs. 11,495 on personal security, and Rs. 2,150 on the security of their houses. The rates of interest vary from 12 to 75 per cent, but a majority of the loans bear interest at 20 per cent per annum.

The debts on landed security amount to 53·7 per cent of the total. Most of these could be checked from the official records of the village, but this could not be done in every case, as some of the lands on which the debts had been incurred were in adjoining villages. Such cases are, however, few. The mortgage bonds were of three types. These are:

1. *Najar Gahan* or ordinary mortgage, in which the land is still held and worked by the debtor, on his own account. Nearly all the mortgages in the village were of this type. They involved 465 acres for an amount of Rs. 15,164 or Rs. 32·5 per acre.

2. *Tabe Gahan* or mortgage, in which the land is handed over to the creditor, but can be redeemed on payment of debt and interest. Under this binding 28 acres were mortgaged for Rs. 365 or only Rs. 12·9 per acre.

3. *Mudat Kharedi* or deferred sale, in which if the loan is not paid within a definite period, the lender automatically take possession of the land. In this type of mortgage 42 acres were involved, for a total of Rs. 200 or Rs. 6-1-0 per acre.

Taking all these types of mortgage together, we have a total of 535 acres involved for Rs. 15,729. Forty-one of the landholders have taken loans on mortgages under one or other of the bindings. The average mortgage per acre is Rs. 29·5. The proportion of land under some sort of mortgage to the total assessed area of the village is 23·8 per cent.

Most of the debts in the village, and especially most of the debts for which these mortgages were given, were obtained from the Marwari money-lender and shopkeeper in the village. This man was brought up in the village as a young man. He had no land but he was in debt after his father's death. He accompanied as a young man, a number of the villagers to Bombay, where they went for work, thirty-five or forty years ago. While in Bombay, he worked as a confectioner, preparing sweetmeats and selling them to the labouring classes. After four or five years, he returned to the village of Jategaon with a sum of about Rs. 500, and settled down as a money-lender and shopkeeper, selling grain and other commodities. Now, after thirty-five years, he is a master of nearly 172

acres of land in this village and of 41 acres in Shikrapur, and has money out on loan to the extent of over Rs. 50,000*. This is an illustration of how a man can make a moderate fortune in the poorest Deccan villages by money-lending and its associated transactions.

It may be noted here in connection with the question of debt, that it seems to be the universal practice in this and the neighbouring villages to give a bond for twice the amount borrowed from the money-lender. Every cultivator who has borrowed tells the same story, and on being questioned as to why he borrows money under such onerous condition, replies saying that there is no other source from which he can obtain money when he wants it. In cases where the original sum can be returned with interest, the money-lender takes it back without demur. But such cases are very few. For even though the borrower may be ready to pay back a part of the sum after a year or so, the money-lender will not accept it, and demands the whole sum or nothing, but allows payment to be further postponed. After a time a suit is filed according to the bond, and thus the borrower is obliged to pay, with interest, what often rises to four times the original amount borrowed. If instalments are taken, receipts for these are rarely given, and the cultivators tell many stories of how the payment has been later on denied.

The rates of interest vary from 12 per cent to 72 per cent. The extreme cases are few, as will be seen from the following statement of the interest on the village debts in 1917.

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*Since our inquiry the old money-lender has died, being carried away by floods in the Vel river in May 1919.

On Land		
Sums bearing no interest...	Rs.	523
Interest at 12 per cent	„	250
Interest at 24 per cent	„	15,016
	Rs.	15,789
On House Property		
Interest at 24 per cent	Rs.	2,150
On Personal Security		
Interest at 12 per cent	Rs.	1,400
Interest at 18 per cent	„	500
Interest at 24 per cent	„	9,325
Interest at 36 per cent	„	150
Interest at 72 per cent	„	70
	Rs.	11,445

The average rate of interest on money raised on land is 23·8 per cent; of that raised on personal security it is 22·7 per cent; and of that raised on houses 24 per cent. The average rate for the whole debt is 23·4 per cent. This involves an annual payment for interest of Rs. 6,750.

Tagai loans.—In the above consideration of debts we have excluded the question of *tagai* loans, as these seem to stand on a different footing. A *tagai* loan is one given by Government, on landed security generally, for permanent improvements, the amount being repaid with 6¼ per cent interest after a term of years, and being a first charge on the land, recoverable summarily if there is any failure in paying an instalment. We have noted the occurrence of such loans, for well-sinking particularly, in olden days, but there is no record of such a loan from 1912 to 1917. Since then two *Mahars* took Rs. 125 for well-sinking, and there has been a generous distribution during the recent famine, of which more anon. Previous to 1912 the following *tagai* loans are recorded, and the list will give a clear idea of the purpose for which they are usually given,

Date	Amount of loans			Number of persons	Purpose
	Rs.	As.	P.		
1892	400	0	0	1	Well-sinking.
1897	150	0	0	3	(no record)
1899	75	0	0	1	Well-sinking.
1900	500	0	0	3	Do.
	51	8	0	4	Purchase of bullocks, etc.
1902	200	0	0	7	Do.
1903	125	0	0	4	Do.
1904	575	0	0	17	Do.
1905-06	250	0	0	23	Do.
1907	1713	4	0	55	(no record)
1909	165	0	0	5	Purchase of bullocks and miscellaneous.
1911	200	0	0	3	Do.
1912	1590	0	0	41	Purchase of bullocks and fodder, and miscellaneous.

During this period it seems possible to follow the bad years, for these were the times when *tagai* loans were granted. 1900 was a famine. 1904 though not recognised as such, appears to have been a time of general difficulty and crop failure. In 1907 something of the same sort seems to have happened, and not less than fifty-five people took loans. Again in 1912 there seems to have been general scarcity. In 1917, Rs. 524 were outstanding.

During the famine of 1918-19 *tagai* loans were given on an unprecedented scale and eighty people in the village received money from Government in this manner, the total amount of loans amounting to Rs. 6000. Of this Rs. 3000 were given for building and repairing wells, and Rs. 3000 for the purchase of bullocks and the like. Most of these *tagai* loans are to be returned in instalments varying from two to ten.

Expenditure on balutas.—The institution of *balutas* or the payment of village servants by an annual charge against the crops which are grown is one of the characteristic features of a Deccan village. The actual payment consists of a fixed amount of grain and fodder on the crops cultivated for grain and fodder. On the other crops it is nominally a similar charge, but is commuted for a quantity of grain and fodder to cover what is supposed to be the due amount. The actual amount and its distribution in 1917, converted into money value at the prices then prevailing, are given in the following table. It may be noted that all landholders are liable for this charge, and that 109 householders were paying towards it. On the other hand there were 31 families receiving *baluta* for services rendered, the eight types of village service noted below being divided among these.

Nature of Village Servant	Number of families who share	Total amount		
		Rs.	As.	P.
1. Carpenter and Smith	3	170	0	0
2. *Chambhars* (Shoemakers) ...	3	100	0	0
3. Barbers	4	50	0	0
4. *Mahars* (see page 107)	14	120	0	0
5. *Ramoshi* (Watchman)	3	30	0	0
6. *Gurav* (priest)	1	25	0	0
7. *Mulani* (Mohamedan)	3	25	0	0
8. *Joshi* (astrologer)	1	25	0	0
		545	0	0

The amount involved, therefore, means a charge of Rs. 0-3-10 per acre on the assessed area of the village, and of six and a-half pies per rupee on the average income from cultivation.

We are now in a position to indicate the normal average compulsory burden on the land of the village. This

consists of the Government assessment, the local fund cesses, and those *balutas* which are part of the organisation of the village and which none can escape. We have, therefore,

	Rs.	As.	P.
Government land assessment, average per acre assessed	0	12	2
Local Cesses	0	0	9
Balutas, average per acre assessed ...	0	3	10
Total	1	0	9

As the capital value of the land is about Rs. 35 per acre (*vide infra*), the annual compulsory charges amount to 2·97 per cent on the capital value.

Personal Expenditure.—In order to get an idea of the economic position of the people of the village, we must try to obtain a clear idea of the standard of life which they themselves consider necessary. Such a standard is not easy to get among people who do not keep accounts, but we have made many inquiries and are now able to fix a minimum standard below which it would be considered that a self-respecting family cannot go. As for food the amounts given are considered necessary to maintain efficiency: as regards other things including clothes, they are what is required to maintain self-respect. In view of certain criticisms advanced, we want to make it clear that our figures have no direct relationship with a theoretical standard of life. There is no suggestion that the people will actually die of starvation if they get less. They may or may not do so, but into that question we do not enter. The calculations are made for a family consisting of one man, two women, and two children: the actual average number in the village is 1·4 men, 1·7 women, and 1·9 children.

Food.—The quantity of food which the villagers consider necessary is not unlike, though on the whole slightly lower than that recorded in our previous study near a big

town: the quality, however, is usually lower, and the standard of living is not so high. The standard ration was as follows:—

Material	Quantity needed per annum	Value per annum		
		Rs.	As.	P.
1. *Bajri* or *jowar* grain (18 lbs. per rupee)	1800 lbs.	100	0	0
2. Pulses (*tur*, *kulthi*, etc.) (20 lbs. per rupee)	600 lbs.	30	0	0
3. Rice and wheat (15 lbs. per rupee)	150 lbs.	10	0	0
4. Salt		4	0	0
5. Chillies, etc.		4	0	0
6. Oil		4	0	0
7. *Gul* (sugar)		3	0	0
8. Miscellaneous		5	0	0
		160	0	0

The total comes, therefore, to Rs. 160 or Rs. 13-5-0 per month per family. If we count a woman as requiring four-fifths and a child three-fifths as much food as a man, the necessary expenditure for food will come to Rs. 42-2-0 per man, Rs. 33-11-0 per woman and Rs. 25-4-0 per child per annum. These amounts are higher than those recorded in our previous study, but in the meantime prices of the main food materials had advanced by twenty-five per cent in 1917.

One note might be made here. The price of grain dominates the cost of food in the villages here more than any one would conceive in Europe. In the present case 87·5 per cent of the annual expenditure on food goes in grain: in our former study it was a little lower (77 per cent).

Clothing.—The clothing of the people in this village seems to be better than that in our previous study. It is just possible that a higher standard in this respect may have been introduced here by the people who are constantly going to and coming from Bombay for work. Of course, there is variation among the people, but in no case did the minimum go down to the standard previously noted at Pimpla Soudagar. As, however, we have been anxious to get at the minimum requirements, we have counted Rs. 12 per annum for a man or woman, and Rs. 6 per annum for a child as necessary. In the early part of 1917 prices in this matter had risen little: as we stand at present (1921), of course, a much larger allowance would have to be made. In 1917 there was usually we are convinced, some saving on this item.

Other Expenses.—No rent is paid for houses occupied by the people as they are owned in almost all cases. Lighting costs very little, as lamps are hardly used in the houses, nor is there at present any appreciable expenditure on smoking or alcoholic liquor. Fuel is not brought from outside the village, and as the sticks, etc. chiefly used for the purpose would not be otherwise saleable, we have not calculated anything for its cost. In the Arcadian simplicity here found, we think that a minimum expenditure of three per cent of the total income on expenses other than those for food and clothing enough to allow. It is, it must be recognised, absolutely the lowest possible figure.

The total expenditure in 1917, recognised as proper according to the opinion of the people themselves, would therefore be as follows:—

	Man	Woman	Child	Family of 5 persons
	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.
Food	42 2 0	30 11 0	25 4 0	160 0 0
Clothing... ..	12 0 0	12 0 0	6 0 0	48 0 0
Other expenses (counting income as Rs. 225) . .				6 12 0
				214 12 0

Thus represents the nett income required by a family of five persons, after paying *baluta* and without counting interest on debts. As the family in this village has not exactly the composition calculated above, the needs in Jategaon will be a little more as follows:—

Food	Rs.	165- 5-0
Clothing ...	„	48-15-0
Other expenses	„	6-12-0
		220- 0-0

This gives Rs. 44 per head on the average of the 147 families for whom our information is given.

In the case of cultivating families, they have to pay *baluta* and hence their income must be higher. Out of 147 families, 109 families pay *baluta* and 31 receive it, while seven families have no interest in it either as payers or receivers. Those who pay (109) have to find Rs. 545 per annum or Rs. 5 per family. This added to the necessary other expenditure, given and minimum total of Rs. 225 as the necessary expenditure of a cultivating family, provided there is nothing to pay on account of interest. This means Rs. 45 per head. We have, in fact

(1) 109 families with a necessary income of Rs. 225 per family of average size or Rs. 45 per head,

(2) 46 families with a necessary income of Rs. 220 per family of average size or Rs. 44 per head.

Balance Sheet for Families in the Village.— With these figures in hand we are now able to draw up a balance sheet for the 147 families in the village. The total income of these families calculated family by family, adding to the total such income as cannot be assigned to a particular family, is Rs. 24,963, or Rs. 167-13-0 per family and Rs. 33-12-0 per head. This indicates an average deficiency of Rs. 11-4-0 per annum for the families paying *baluta* and Rs. 12-4-0 per annum for those who do not. The figures therefore, indicate that even if there were no debts, and if the village were considered as a whole, it is not able to pay its way, even when the season is the average of the last ten years, and when a certain amount of outside profit is available. The interest on the debts is a terribly crushing burden, and amounts to 27 per cent of the total income.

The actual figures for the 147 families are as follows:—

Income

Income from land (page 116)	Rs.	15,802*
Income from other sources (page 116)	„	8,546
Income from trees (page 116)	„	615
Total	Rs.	24,963

Expenditure

Interest on debts (page 120)	Rs.	6,755
Necessary personal family expenditure (page 126)	„	32,221
Total	Rs.	38,976

We have calculated on an average year. In a good year such as 1915-16 or 1916-17, the position would be different and using the figures obtained on page 95 we get an increased income from land of Rs. 26,613, and the whole statement of income becomes

*This figure does not agree with that given on page 95, as some of the cultivators own land (seven reap profit from it) which is outside the village area.

Income from land	Rs. 26,613
Income from other sources ...	„ 8,546
Income from trees	„ 615
	Rs. 35,774

Even, therefore, in the two best years in the last series of seasons, and calculating on the prices of 1917, the people of the village could not meet their requirements for maintenance at their own standard of life, and for paying interest on debts, without outside assistance. Some outside assistance *is* obtained as the post office and other records, already quoted, show, — but even this does not choke the debit balance, and it means that even in a good year the people are not in a satisfactory economic position. In an average year, such as 1917, things are much worse, and the living must be, in practice, far below the standard indicated to us, or debts must be increasing with interest remaining unpaid.

We have so far calculated for the village as a whole. But a further analysis is required, and we have divided for this purpose the families into the same three classes as in our previous studies of similar character. These classes are as follows:—

1. Those families in which the income derived from land is sufficient in an average year, to maintain them in a sound economic position.

2. The families in which the income derived from land together with that derived from outside labour is sufficient, in an average year, to maintain them in a sound economic position.

3. Those families in which the economic position in an average year is unsound, even when income from land and outside labour are both considered.

The number of families in each class is

(1) 10 families
(2) 12 do.
(3) 125 do.

It thus appears that out of 147 families investigated only 22, or just under 15 per cent can pay their way in the standard they have themselves fixed. The others are living below that standard, or else are deriving income from outside, or they are increasing their debts.

Group I. — The first group, as has been stated, consists of ten families. All are land-owners. The average number of members per family is 4·3. Of the total of 43 persons, 30 are adults and hence possible money-earners.

The amount of land held in this group of ten families is 411 acres, that is to say 41 acres per family or 9½ acres per head. In three cases the income from land is supplemented by outside labour, while in two other cases they lend money, and gain income by interest. Four families have debts to the extent of Rs. 1,225, and have to pay Rs. 210 annually for interest. Thus 8·9 per cent of the total expenditure of the group is for interest. The general position of the group is shown below:—

Income

From land	Rs. 3,149
From other sources... ...	„ 1,507
	Rs. 4,656

Expenditure

Personal expenditure ...	Rs. 2,128
Interest on debts	„ 210
	Rs. 2,338

It is curious to see how the reasons which we have before indicated as tending to raise a family into this class are repeated in the present case. They are (1) the small size of the family, (2) a large proportion of contributors (30 possibly out of 43) to the family income, and (3) few debts.

Group II.—The second group comprises all those who are able to pay their way by means of money received from land together with income from other sources also.

These sources are almost entirely field or other labour. The number of families in this group is small here because the outlets for excess of labour is small. An increase in the cultivation of intensive crops would bring up the number of this class, as well as of group I. because at present there is a very considerable amount of spare labour in the village which cannot leave and yet is not fully employed.

The total number of families in this group is 12, and they only have 2·1 members per family. Of the total of 25 persons, 19 are adults, and hence possible earners of money. Among them five families have *no* income from land and are dependent entirely on labour. Nine among the twelve families are Marathas, one is the *gurav* or village priest (of the god Shiva), one is the *chambhar* or shoemaker, and one is a *mahar* family.

The actual number or members per family is shown in the following table:—

Number per family	Families with this number
1	6
2	3
3	1
4	1
6	1

The average amount of land held in this group is 3·6 acres per family, but as only seven families possess land this is divided among them at the rate of 6·2 acres per family.

As most of the people in this group are dependent wholly or largely on wages obtained as labourers, and as many of them have very little landed security, their debts are, on the whole, small. The twelve families in fact, only owe Rs. 300, and this means an annual charge of Rs. 66, or 5·3 of their total standard expenditure.

The general position in the group is shown by the following figures for the 12 families.

Income

From land	Rs.	250
From labour	„	1,213
Total	Rs.	1,463

Expenditure

Personal	Rs.	1,179
Interest on debts	„	66
Total	Rs.	1,245

Group III. — The third is, of course, by far the largest group in the village. It consists of those families whose economic position is unsound, and who cannot live, according to the village standard, on their total earnings. There are 125 families (85 per cent of the total) in this group, who own 1678 acres, that is to say 13·4 acres per family or 2·5 acres per head. Out of the total, 95 are Marathas 12 are of non-Maratha castes excluding the depressed classes, and 18 belong to the depressed classes. The total number of persons is 664, of which 402 are adults and 262 are children. The average number of members per family is 5·3—higher than in the other groups: the actual number is, however, very variable as the following figures show:—

Number per family	Families with this number
2	6
3	15
4	36
5	28
6	12
7	8
8	8
9	4
10	2
11	3
12	1
13	1
15	1

All the families except four have some income from land, and among these landholders the average acreage per family is 13·8. The position with regard to debts is very bad. The total debt is no less than Rs. 27,784 rupees, and they should pay annually Rs. 6,479 on account of interest. This means that 18·3 per cent of their standard expenditure or 35·5 per cent of their actual income would be absorbed in paying interest on debts.

The general position in the group is shown below:—

Income		
From land	Rs. 12,403	
From outside labour	„ 5,826	
	„ 18,229	
Expenditure		
Personal expenditure		Rs. 28,914
Interest on debts		„ 6,479
		Rs. 35,393

There is thus an annual deficiency of Rs. 137 per family or in other words the actual earnings, in an average season, are little more than half what is required to enable the people to live at their own standard of life and also to pay interest on debts. If debts were removed, seven of the families would be solvent. But it is clear that in a year like 1917, there is a very large class of people in Jategaon, who must live far below their own standard, or who must obtain outside resources such as contributions from members of their families who are away, or who must still further increase their debts.

We must call attention to the very important conclusion that emerges from this discussion that it is not the debt which maintains, in an average year, the bulk of the people in this group in an insolvent condition. If debt disappeared, still 80 per cent of the village would be insolvent, in an average year. The whole maintenance of the position depends on the hope of good seasons, which

have come about twice in the last ten years. Then interest can be paid, perhaps debts redeemed, and the position improved.

Summary of Groups I. II. and III.—Thus an examination of the position of the three economic groups in the village show that the conditions of solvency are to have a small family with few children, much land, and few debts. This is perhaps a truism, but it is worth calling attention to the matter, as the existence of such a state of affairs to such a striking degree seems to indicate the presence of something decidedly anti-social. As the economic position gets lower, the size of the family increases, but whether the low economic position tends to cause large families or *vice versa* we are not prepared to say. The following is a summary of the position in a year which well represents the average of the past ten years on the prices of 1917.

	Group I. Solvent from land alone	Group II. Solvent from land, labour, etc.	Group III. Insolvent
Number of families in group ...	10	12	125
Number of population in group...	43	25	664
Income	Rs.	Rs.	Rs.
From land	3,149	250	12,403
From labour, etc.	1,507	1,213	5,826
Total	4,656	1,463	18,229
Expenditure			
Personal and *baluta*	2,128	1,179	28,914
Interest	210	66	6,479
Total	2,338	1,245	35,393
Excess (+) or deficiency (—) ...	+2,318	+218	—17,164
Do. do. per family	+232	+18	—137
Do. do. per head	+54	+9	—26

This economic inquiry into the condition of the people in a village which represents many hundreds in the precarious tract of the central Bombay Deccan, and which is of a purely rural character is disheartening. It is difficult indeed to see where the future of such a village lies. If it had a series of good years, it would flourish, and though it could hardly pay its way and pay off debt, it would gradually, we think, recover a sound economic position, though the people would for a good many years have to live below their own standard, or be subsidised by their representatives living in the industrial centres. But what are the chances of a good year? It has already been stated that only two years out of the last ten years can be considered as such. If we take (see page 60) the fallow area as the best indication of the character of a season, and if we consider 1915-16 and 1916-17 as being good years, though the anna valuation was only 10 annas, then from 1895-96 to 1919-20 we may classify the seasons as follows*:—

1. Materially above 1915-16 and 1916-17 or exceptionally good seasons... 2
2. Good seasons 7
3. Average or slightly above average seasons ... 12
4. Seasons considerably below average including famine years... 3

These figures must be taken as only very loosely accurate and all they can pretend to do is to give an indication of the state of affairs. But, so far as they are true, they show a slightly better chance of good years in the last twenty-five years than in the last ten. In 35 to 38 per cent of cases the year was good, and the position might be improved: in 50 per cent of years the standard was not better than in our typical year 1917: in 12 to 15 per cent the position was disastrous.

*The records for one season are missing.

What one of these last disastrous years means for the village may be indicated by what has happened in certain directions in 1918-19, a genuine famine year. It has meant

(1) the borrowing of Rs. 6,000 by *tagai* loans, of which Rs. 3,000 was for well-sinking and repairing and Rs. 3,000 for purchase of cattle (see page 121.),

(2) the mortgage of 335 acres of land by twenty-six people for Rs. 7,021, which must be added to the village debts in 1917 recorded above,

(3) the sale of 65½ acres of land by five people for Rs. 2,137,

(4) the loss of 59·7 per cent of the bullocks, 80·5 per cent of the cows, and 74 per cent of the buffaloes,

(5) 300 people leaving the village for work during the famine, 200 going to a local famine camp, the rest going to industrial centres.

Counting only the increase in debt, the famine has meant an increase of indebtedness of at least Rs. 13,021, or by over 44 per cent in the one year. Some of this may be paid off at an early date, but much will probably be permanent either in its present or in some modified form.

CHAPTER VII.

VALUE OF THE VILLAGE

The actual capital value of a village like Jatcgaon Budruk and its possessions is a matter of some importance in discussing its economic position and that of its inhabitants. It is not easy to get at very accurately but we think that a fair figure can be reached.

Value of Land. — There is far less difficulty in calculating the value of land in the present case than in many others, as sales are common, several taking place every year. If we take into account the actual transactions which have taken place in the six or seven years preceding 1917, we find that 256 acres of land were actually sold for Rs. 9,038. This contains, however, 20½ acres garden land sold at a high rate, and bringing Rs. 1,892. If we exclude this, the dry land of the village is found to be worth Rs. 30 per acre; if it is included the average value per acre comes to Rs 35. As the village area contains about 145 acres of land valued above 10 annas, which includes most of the garden land, we may take the latter figure as the average value per acre of land in this village considered as a whole. 65½ acres of dry land were sold in 1918-19 famine for Rs. 2,137, or at a rate of Rs. 32·6 per acre — a figure not widely different from that recorded above. The value of garden land varies from Rs. 75 to Rs. 300 per acre, according to the kind of land, and according as to whether it contains a well or not.

If we take Rs. 35 as the average sale value of all the land in the village, and then compute the total capital value of the assessed area, the figure of Rs. 79,450 is reached.*

* If the capital value of the village be taken as 25 times the assessment as has been suggested, a very low figure is reached, only 54% of that given here.

At the risk of digressing, a few words may be said with regard to the unexpectedly frequent transfers of land which take place in this village. In the previous village which we studied such transfers were rare, so rare indeed that it was difficult to estimate the real value of the land in the area considered. But here it is different. Change of ownership is frequent, and this among the residents of the place. The actual area transferred at various periods since 1890 is as follows:—

1891-1900	—	172 acres
1901-1905	—	58 acres
1906-1910	—	203 acres
1911-1915	—	323 acres
1916	—	18 acres
1917	—	39 acres
1918-1919	—	65½ acres

Leaving aside the last year, which is affected by famine there seems, on the whole a tendency for the transfers to increase. The purchasers are usually other village residents, and the money-lender has accumulated 172 acres in his hands, while there are mortgages on 535 acres also, which may at any time be converted into sales.

There is another method of ascertaining the value of the land in a village like the present, namely that of determining the rental value,—and this is generally more or less the economic rent of the land. Now taking one year (1915-16) we find as follows:—

1. In fifteen cases, involving 101 acres the land is given for rent on paying the Government assessment only. The assessment in these cases is Rs. 85 or 13¼ annas per acre, that is to say, very slightly above the average assessment of the village per acre. These 101 acres fairly represent, therefore, the village as a whole.

2. In eight cases, involving 105 acres the land is given for rent with an average annual charge of Rs. 1-8-4

per acre. Of this 12 acres is garden land with well irrigation, and this pays Rs. 2-10-8 per acre. Including this the area in question pays 2·1 times the assessment as rent.

3. In fifteen cases involving 81 acres the land is given for cultivation with a portion of the outturn to be given as rent. The proportion of outturn varies between one-third and one-half. In four cases it is one-third: in ten cases it is half. Most of the land rented under these conditions is good land either with irrigation or recognised as capable of growing a second crop. In some cases of such land there is an alternative money rent at the option of the tenant. Thus we have, as typical cases,

(1) 2 acres rented for half the outturn or Rs. 10, but this land has well-irrigation,

(2) 8 acres rented for one-third the outturn or Rs. 75, but again there is well-irrigation

(3) $\frac{1}{4}$ acre rented for one-third of the *garden* produce or Rs. 25. This is the highest rate noted in the village and so on.

4. Sometimes there is a money rent to be given, and the assessment paid also. If we calculate in these cases, the whole charges we find that on 147 acres the total rent will be Rs. 313 or Rs. 2-2-0 per acre. Two areas of this have an abnormally high rent,—nearly eight times the assessment,—due to irrigation facilities. If these are excluded, the remainder are rented at Rs. 1-7-4 per acre on 2·75 times the assessment.

5. In three cases involving 56½ acres the rent is fixed in kind, the quantity being named, plus the assessment. Counting the grain at 20 pounds per rupee, the rental value of this land is Rs. 1-8-7 per acre, the assessment being 9⅓ annas per acre. Thus on this obviously poor land the rent amounts to 2·6 times the assessment.

Summarising with regard to the rental value of land we have

(1) 101 acres given for cultivation on payment of assessment only Re. 0-13-5 per acre,

(2) 105 acres given directly at an average of Re. 1-8-4 per acre; or almost exactly twice the average assessment in the village,

(3) 82 acres given on payment of half or one-third the outturn,

(4) 148 acres given on condition of the payment of assessment and a rent in addition, the whole amount being $2\frac{3}{4}$ times the average assessment in the village,

(5) $56\frac{1}{2}$ acres given for a definite grain rent plus the assessment. The total amounts to 2·6 times the assessment on the basis of the prices of 1917.

As near, therefore, as we can make out, the assessment in this village represents 45·7 per cent of the economic rent charged in the village. Allowing twenty-five years' purchase on the economic rent as the value of the land, which we think is probably correct, under the conditions of land-hunger prevailing in Western India, we get the value of the village land to be Rs. 86,490 or slightly above the figure obtained from a direct consideration of sales. If the sale figures are reliable, this means that land is worth in this village nearly 23 years' purchase on the basis of the economic rent.

Value of Houses.—The value of the houses is still more difficult to estimate, as there are no sale transactions to guide us. We have found seven mortgages on houses as follows:—

1 house mortgaged for Rs. 1000
1 house mortgaged for Rs. 500
1 house mortgaged for Rs. 250
4 houses mortgaged for Rs. 100 each.

This gives an average of Rs. 307 as the mortgage value, and if this be taken as 75 per cent of the actual value, it

means the average value of these houses is Rs. 410. But the majority of the houses are of a much poorer type, and certainly only three to four per cent of the houses can be valued at more than Rs. 500. It is not possible to put the average value of a house higher than Rs. 300, and this is the figure we have taken.

This gives the total value of the houses occupied by 147 households, as Rs. 44,100. This is not a realisable value, however, and at any forced sale, the amount obtainable would certainly be far lower.

Value of Live-stock.—In 1917 the number of cattle was high in this village, and hence their value was relatively large. The figures quoted on page 104 for the value of the live-stock come to Rs. 21,443. The sheep and goats have been omitted.

Value of Implements.—As already noted the value of the implements and carts is very small, but the figure nevertheless must be considered. The data are as follows:—

Larger implements	—	Rs. 872
Smaller implements	—	„ 764
Carts	—	„ 1,800
Leather *mhots* for wells	—	„ 175
		Rs. 3,611

The whole capital value of the village, if it could be sold as a running concern, and excluding, of course, the purely personal possessions of the people, would, therefore, be

	Total	Per cent of Village Value
Land	Rs. 79,450 ...	... 59·1
Houses	„ 30,000 ...	... 22·3
Live-stock ...	„ 21,443 ...	... 15·9
Implements ...	„ 3,611 ...	... 2·7
	Rs. 1,34,504	

Such an estimate must be only approximate, but it enables us to ascertain the proportion which certain village charges bear to its capital value, and so the relationship which they bear to the conditions prevailing in other countries.

1. The Government assessment, amounting to Rs. 1,734 is 2·18 per cent of the value of the land and 1·27 per cent of the total capital value of the village. This is very similar to the figures found in Pimpla Soudagar — 2·06 and 1·46 per cent respectively. The whole of the compulsory charges on landholders reach 2·97 per cent of the land value, and 1·75 per cent of the total village valuation.

2. The average nett return for crops, taking the figure previously given of Rs. 14,378, amounts to 18·0 per cent of the land value and 10·6 per cent of the total village value.

3. The debts of the village (see page 120) amount to Rs. 29,834. Even where the security given is personal, the essential basis on which the debts are incurred is, of course, the property landed or other, possessed by the people. The debts amount to 22·1 per cent of the total value of the village, and they involve an annual charge of five per cent on this value.

CHAPTER VIII.

The Effect of Rise of Prices on Rural Prosperity*

The effect of a rise in prices on the condition of the rural population in India has been a matter of very serious difference of opinion. Some authorities have held that, seeing that the produce of the land was the source of the prosperity of landholders and village people generally, the fact of their being able to obtain a higher price for it would obviously lead to their general economic advantage. Others, equally well-informed, have stated that whatever would happen in theory, in practice every rise in price has meant more difficulty and more poverty in the rural areas. The matter is really of great importance, because, among other reasons, in a country of periodic land settlements such as occur in India changes in price have always been considered a valid factor in determining changes in land assessment.

There are many methods of making a study of the effect of a rise in prices on rural prosperity. But the series of village studies in Western India which we have made in recent years seem to give us data for tackling the question at close quarters. The method of study in each case has been similar. The people of the village have been studied family by family. The sources of revenue have been ascertained for each family, as well as the necessary expenditure, including the payments of interest on debts which they had incurred. To complete such a

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* The present chapter was contributed as a separate paper to the Economic Conference in Madras in 1919-20, and so there may be found a number of repetitions of material contained in the foregoing chapters. It has seemed wise, however, to let it stand without material change.

balance sheet, family by family, naturally involved a certain number of assumptions as to the gross crop per acre, and hence the gross revenue from land, and also the minimum cost of living and clothing at the time when the study was made and at the prices prevailing. If the assumptions made be correct, then the survey affords a means of ascertaining the economic position of every family in the village, and also the effect which any change in prices or other conditions would make on this position. It only requires, in fact, a recalculation of the family data which we already possess, on the basis of a new level of prices, to enable a view to be obtained of the economic effect of any rise which may have occurred.

In attempting to carry out this scheme of utilising our family data for the study of the present problem it may be stated that we have used the figures in hand for two Deccan villages. One of these is Pimpla Soudagar, an account of which has been already published, and which is situated ten miles west from Poona. The other is Jategaon Budruk, a somewhat larger village about twenty-five miles east from the capital of the Deccan. In the case of nearly every family in these two villages we have considered what would be the effect (1) of a general fifty per cent rise in prices without rise in wages, and (2) of a general fifty per cent rise in prices with a corresponding (fifty per cent) increase in wages at the same time.

In determining what meaning was to be attached to the term 'a general rise in prices', we have made it include a rise involving all types of materials used by the village. Two general expenses had, however, to be excluded. On the one hand, land revenue, being fixed by a thirty years' settlement, cannot rise and must be considered to remain constant. On the other hand, the interest charged on loans in the village has not altered materially as a result of the rise of price of articles or of money in the great centres. The only reason we can think of for this is that

the rate of interest was already so high—the average for the two villages is 19¼ and 23 per cent respectively—that it can hardly rise further and is hence independent of moderate rises in the value of money elsewhere. But except for land and money, the price of every commodity was assumed to rise to an equal extent, and to stand at a level fifty per cent higher than that previously occupied. The results have been exceedingly interesting, and we venture now to lay them out.

To take the village of Pimpla Soudagar first, we may say that when the original study was made we divided the 103 families in the village, for which we had data, into three groups. Group I. consisted of families which were able to maintain themselves, at a standard of efficiency and respectability which they considered satisfactory, from the income from land and cultivation alone. Group II. consisted of those who were, at their own standard, still in a solvent condition, though income from land had to be supplemented by income from their labour to make them so, while Group III. included all those families who could not maintain themselves, at their own standard, even from income from land combined with income from labour, without going into debt. The economic position, in other words, of Group I. and II. was sound; that of Group III. was unsound.

The economic position of the village families under these groups was as follows in 1916:—

Group	No. of families	No. of persons	Income from		Total Income	Necessary expenditure	Interest
			Land	Labour			
			Rs.	Rs.	Rs.	Rs.	Rs.
I.	8	25	1,699	232	1,931	1,254	54
II.	28	136	1,740	6,710	8,450	6,890	652
III.	67	349	4,899	6,169	11,068	16,987	1,809
Total	103	510	8,338	13,111	21,449	25,131	2,515

Taken group by group we have in summary:—

1. In Group I. (solvent from land only) there was an excess of Rs. 677 per annum on eight families, or Rs. 84·6 per family per annum.
2. In Group II. (solvent from land and labour) there was an excess of Rs. 1,560 per annum in twenty-eight families, or Rs. 55·7 per family per annum.
3. In Group III. (insolvent) there was a deficit of Rs. 5,919 per annum in sixty-seven families, or Rs. 88·4 per family per annum.

On the whole on the 103 families for which we have data there was a deficit of Rs. 3,682 or Rs. 35·7 per family per annum.

Let us see what would be the effect of a rise in the cost of commodities of 50 per cent. This means, of course, a rise in the income from land, and a rise in expenditure on all items except labour and interest. The immediate result is, dividing the population into the same groups as before, to give us results as follows:—

Group	No. of families	No. of persons	Income from		Total Income	Necessary Expenditure	Interest
			Land	Labour			
			Rs.	Rs.	Rs.	Rs.	Rs.
I.	10	30	3,233	418	3,651	2,423	318
II.	6	32	1,683	1,080	2,763	2,303	238
III.	87	448	7,608	11,667	19,275	31,056	1,959
Total	103	510	12,524	13,165	25,689	35,782	2,515

Taken group by group we have in summary:—

1. In group I. (solvent from land only) there was an excess of Rs. 1,228 per annum on ten families, or Rs. 122·8 per family per annum.
2. In group II. (solvent from land and labour) there was an excess of Rs. 460 on six families, or Rs. 76·7 per family per annum.

3. In group III. (insolvent) there was a deficit of Rs. 1,178 per annum in 87 families, or Rs. 135·4 per family per annum.

On the whole on the 103 families for which we have data there was a deficit of Rs. 10,093 or Rs. 98 per family per annum.

These results are very striking. The general effect of the rise of prices on the village as a whole is disastrous, but it has benefited a few families, which depend very largely on their own labour on their own land, *and who have very large debts.* The two families which have risen to the first group, show the following figures before and after the rise in prices.

	Income from		Total Income	Necessary Expenditure	Interest	Excess of Income
	Land	Labour				
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Before rise in prices	457	186	613	540	264	73
After rise in prices	685	186	871	650	264	221

These two families, therefore, rise from the second to the first group.

But while the effect has been beneficial in these two cases, a very large number of families are driven from the second group into the insolvent class. One family rises from the third to the second group, because nearly eighty per cent of its income is derived from land and also because of large interest commitments. It is curious to find the possession of large debts being a source of economic strength under the changed conditions!

The effect of the rise in prices on the position of the six families now belonging to group II. is shown in the following table:—

Rise in Prices	Income from		Total Income	Necessary Expenditure	Interest	Excess of Income
	Land	Labour				
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Before	1,122	1,080	2,202	1,674	235	528
After	1,683	1,080	2,763	2,303	235	460

Group III. (or the insolvents) becomes very much larger as a result of this rise in prices. If one family leaves this group twenty-one descend to it, and among these 21 families a total excess of income in the year of Rs. 1,028 becomes a deficit of Rs. 901. The effect of the rise on the condition of the 66 families which originally belonged to this group is equally disastrous, and an original deficit of Rs. 5,914 per annum now becomes Rs. 10,207, being an increase of 72·5 per cent.

Taking the village as a whole, an original deficit of Rs. 3,682 in all the families in the village taken together, has increased in consequence of the rise in prices to Rs. 10,093, or by 174 per cent.

So much for the effect of a rise in prices without a rise in wages. It may enrich a few, but it is disastrous for the village as a whole. But if wages rise also to the same extent as prices, what will be the economic result? The following table shows the figures:—

Group	No. of families	No. of persons	Income from		Total Income	Necessary Expenditure	Interest
			Land	Labour			
			Rs.	Rs.	Rs.	Rs.	Rs.
I.	10	30	3,233	627	3,860	2,536	318
II.	27	140	2,541	9,974	12,515	10,086	508
III.	66	340	6,735	9,109	15,854	23,871	1,689
Total	103	510	12,509	19,710	32,229	36,493	2,515

Taken group by group we have in summary:—

1. In group I. (solvent from land only) there was an excess of Rs. 1,324 per annum on ten families, or Rs. 132·4 per family per annum.
2. In group II. (solvent from land and labour) there was an excess of Rs. 2,429 per annum on 27 families, or Rs. 90 per family per annum.
3. In group III. (insolvents) there was a deficit of Rs. 8,017 per annum on 66 families, or Rs. 121·5 per family per annum.

On the whole, in the 103 families for which we have data, there was a deficit of Rs. 4,264, or Rs. 41·4 per family per annum.

The position now reached is, of course, as would be expected, not unlike that originally existing. There were 36 families in a sound position originally; now there are 37. Two rise from the second to the first group on account of increased income from land, and the stationary expenditure on interest; and one family rises from group III. to group II. for the same reasons.

The ten families now in group I. have improved their position. Formerly they had an excess of income of Rs. 750; now this excess is Rs. 1,324. There has, in fact, been a rise of 76 per cent. That is to say the excess has increased in greater proportion than the rise in prices and wages. The twenty-seven families in Group II. have also improved their economic position. Formerly they had an excess of income of Rs. 1586; now this excess is Rs. 2,429. There has, in fact, been a rise in the nett profit per annum of 53 per cent, or again, in slightly higher proportion than the rise in prices and wages. The nett loss of the sixty-six families now insolvent (group III.) according to our standard has increased from Rs. 5,914 to Rs. 8,017, or by nearly 36 per cent. This is very large, but the increase in loss is not quite in the same proportion as the rise in prices.

Generally, we may draw the following conclusions with

regard to the effect of a rise in prices and wages to the extent indicated on the economic condition of the population of the village of Pimpla Soudagar.

I. If prices rise 50 per cent without a rise in wages we find as follows:—

(*a*) The people who depend on land alone, *which they work with their own labour,* and who have sufficient land to maintain them in a sound position before the rise in prices, are much better off.

(*b*) Where there is a combined dependence on land (worked by themselves) and on labour, and where there was a sound economic position before the rise in prices, the final position depends solely on the proportion between the income from self-worked land and that from labour.

(*c*) The man who benefits most is he who works his land by labourers, in other words, the non-cultivating proprietor.

(*d*) The general effect on the village population is disastrous, and the annual deficit among the families belonging to the village, added together, increases enormously.

II. If prices rise 50 per cent, accompanied by a corresponding rise in wages, we find as follows:—

(*a*) The people who depend on land alone, which they cultivate with their own labour, and who had sufficient land to maintain them in a sound position before the rise in prices, are again much better off.

(*b*) Where there is a combined dependence on land (worked by themselves) and on labour, and where a sound economic position existed before the rise in prices, the position is still improved, and the improvement is slightly greater than the rise in prices.

(*c*) The non-cultivating proprietor is not appreciably affected, except in so far as he has large debts.

(*d*) The general effect on the village population is to lower their economic position. The annual deficit of the families in the village taken together, has been increased by 16 per cent.

III. With a rise of prices, whether wages increase or no, two general results seem to ensue:—

(*a*) The gulf between the solvent and the insolvent classes tends to widen. The vast majority of the people who were solvent, especially if they were solvent from land, seem to become more solvent: the insolvent previously become in most cases more insolvent.

(*b*) As interest has not risen with rise in prices, those who had large debts incurred previously have suffered less in proportion than the others.

So much for the results obtained by a study of the families in Pimpla Soudagar. But that village has been described as not typical because a considerable proportion of the population obtain their livelihood by working at Poona, or in Kirkee, which is close by. It was, hence, of importance to investigate a place, otherwise of a similar character, but far from any large labour centre. The village of Jategaon Budruk was chosen, being 25 miles from Poona, and having no large non-agricultural demand for labour anywhere near. Here there was a population of 732 in 147 families, and the results of our enquiries were treated in exactly the same way as already described for Pimpla Soudagar.

The economic position of the village families, divided into the same groups as before, was as follows in 1917, that is to say, before the recent rapid rise in prices began:—

Group	No. of families	No. of persons	Income from		Total Income	Necessary Expenditure	Interest
			Land	Labour			
			Rs.	Rs.	Rs.	Rs.	Rs.
I	10	43	3,149	1,507	4,656	2,338	210
II	12	25	250	1,213	1,463	1,245	66
III	125	664	12,408	5,826	18,234	35,393	6,479
Total	147	732	15,807	8,546	24,353	38,976	6,755

Taken group by group we have, in summary:—

1. In Group I. (solvent from land only) there was an excess of Rs. 2,318 per annum on ten families, or Rs. 231·8 per family per annum.
2. In Group II. (solvent from land and labour) there was an excess of Rs. 218 per annum on twelve families, or Rs. 18·1 per family per annum.
3. In Group III. (insolvent) there was a deficit of Rs. 17,164 per annum on 125 families, or Rs. 137·3 per family per annum.

On the whole, on the 147 families for which we have data, there was a deficit of Rs. 14,628 or Rs. 99·5 per family per annum.

It is at once obvious that this is a village where the original difference between the more wealthy classes of the vilage and the poorer inhabitants is much greater than in the case previously studied, and also that the proporton of insolvent families is much greater also.

Let us see what would be the effect of a rise in the cost of commodities by 50 per cent, without rise in wages or in interest. This is shown in the following table:—

Group	No. of families	No. of persons	Income from		Total Income	Necessary Expenditure	Interest
			Land	Labour			
			Rs.	Rs.	Rs.	Rs.	Rs.
I.	12	58	6,088	1,507	7,595	4,652	402
II.	3	4	141	227	368	343	24
III.	132	670	17,474	6,809	24,283	49,952	6,329
Total	147	32	23,703	8,543	32,246	54,947	6,755

Taken group by group, we have, in summary:—

1. In group I. (solvent from land only) there was an excess of Rs. 2,943 per annum on twelve families, or Rs. 245·2 per family per annum.
2. In group II. (solvent from land and labour) there was an excess of Rs. 25 per annum on three families, or Rs. 8·3 per family per annum.
3. In group III. (insolvent) there was a deficit of Rs. 25,669 on 132 families, or Rs. 194·4 per family per annum.

On the whole, on the 147 families for which we have data, there was a deficit of Rs. 22,701, or Rs. 154·4 per family per annum.

The position revealed by these figures is extraordinarily similar to that shown in the village previously stated. There were 22 families in a sound position originally, now there are only fifteen. Two families rise from third to the first group on account of the increased income from land and the stationary expenditure on interest, which forms proportionately a very large part of the total expenditure. A very large proportion (75 per cent) of those in group II. fall into the insolvent class: this would perhaps be expected, as they depend for their solvency largely on the income from labour.

The twelve families now in group I. have improved their position. Formerly they had an excess of income of Rs. 2,277: now this excess is Rs. 2,943. There has, in fact, been a rise of 29 per cent, which though less proportionately than the actual rise in prices, is substantial. The three families remaining in group II. have actually lot economically by the rise in prices, and barely maintain their solvency. The nett loss of the remainder (Group III.), or the insolvents according to our standard, has increased by 51 per cent, a proportion practically the same as that of the rise in prices.

Taking the village as a whole, the effect of a rise in prices of 50 per cent without a rise in wages has been to convert an original deficit of Rs. 14,628 into a deficit of Rs. 22,701, or an increase of 55 per cent. The proportion is not so large in the case of this village as in that previously studied, on account of the larger proportion of the income due to the self-working of the land, and also on account of the very much greater indebtedness of the village.

So much for the effect of a rise in prices without a rise in wages. If wages rise also to the same extent as prices, the economic result is shown by the following table:—

Group	No. of families	No. of persons	Income from		Total Income	Necessary Expenditure	Interest
			Land	Labour			
			Rs.	Rs.	Rs.	Rs.	Rs.
I.	12	58	6,088	2,260	8,348	4,704	402
II.	13	29	373	2,117	2,490	2,127	90
III.	122	645	17,242	8,420	25,662	48,231	6,263
Total	147	732	23,703	12,797	36,500	55,062	6,755

Taken group by group, we have, in summary:—

1. In Group I. (solvent from land only) there was an excess of Rs. 3,644 per annum on twelve families, or Rs. 303·7 per family per annum.
2. In Group II. (solvent from land and labour) there was an excess of Rs. 363 per annum on 13 families, or Rs. 27·9 per family per annum.
3. In Group III. (insolvent) there was a deficit of Rs. 22,569 per annum on 122 families, or Rs. 185 per family per annum.

On the whole, on the 147 families for which we have data, there was a deficit of Rs. 18,562, or Rs. 126·3 per family per annum.

The general conclusions are, therefore, almost identical with those reached in the case of the village previously studied. There were 22 families originally in a sound position; now there are 25, or a slight increase. All those previously solvent remain so, and three are added from the insolvent class. The improvement in the position of the latter is due, as before, to the increased income from land, and to the interest being stationary.

The twelve families now in Group I. have improved their position. Formerly they had an excess of income of Rs. 2,277; now this excess is Rs. 3,644. There has been, in fact, a rise of 60 per cent—that is to say, the excess has increased in greater proportion than the rise in prices and wages. The 13 families in Group II. have also slightly improved their economic position. Formerly they had an excess income of Rs. 195; now this excess is Rs. 363. Though the annual profit in these families is small, yet it has risen by 86 per cent, or again, in larger proportion than the rise in prices. The nett loss of the 122 families now insolvent according to our standard (Group III.) has increased from Rs. 17,119 to Rs. 22,569, or by nearly 31 per cent. This is again large, but the increase in loss is not quite in the same proportion as the rise in prices.

The results in the two villages under study are, therefore, exceedingly similar, and the results drawn on a previous page for Pimpla Soudagar seem to be perfectly true for Jategaon Budruk. We would particularly call attention to the general conclusions. These show the mitigating effect of a previously high rate of interest or the results of a rise in prices. And more important still they show how a rise in prices will tend to emphasise economic differences, especially where the change in prices does not connote a corresponding change in the rate of interest.

So far we have been dealing with the effect of the

rise of prices on the population as a whole: the matter is of special interest, however, *in connection with landholders,* as it is they who would be affected by any rise in assessment which might be proposed on account of such a rise. Let us see how this class would be affected. We have only got figures for Jategaon Budruk, but these are clear.

There are only twelve families in this village who are not landholders, and if the remainder are classified as above, we get the following result.

1.	*Nett* deficiency of the landholders per annum before rise in prices	Rs. 14,631
2.	*Nett* deficiency of the landholders per annum after 50% rise of prices, but no increase in wages	„ 21,937
3.	*Nett* deficiency of the landholders per annum, after 50% rise in prices and in wages...	„ 18,600

It thus appears that the conclusions already given for the village as a whole are substantially true if the landholders only are considered, and this conclusion seems of great importance.

We are not, at present, prepared to extend the application of the conclusions reached in this chapter, from the typically food producing villages which we have considered, to the places where large crops of cotton, sugar, or similar crops are produced for sale. These cases demand special study, and we feel that it is impossible to say, from general considerations only, how such villages have been affected by the recent rise in prices. We may have the opportunity to make such a study in these cases later on, but, in the meantime, it must not be assumed that they have necessarily, as a whole, benefited by a rise in prices such as has occurred.

Leaving such special cases on one side, we may consider that, in general, the evil effects of rise in prices

on the general condition of the rural population can, in the Deccan, at any rate, hardly be gainsaid. And if this is clear, the question of the maintenance of low prices by any means may be a matter for much more serious concern than has hitherto been realised.

CHAPTER IX.

General Conclusions

The village of Jategaon Budruk possesses features of very great interest to any student either of agriculture or of rural conditions generally in Western India. Its remoteness from town life, the maintenance here very largely of the self-contained and self-sufficient character of the village community even to-day, the way in which life is carried on in a tract as precarious as the present, the relationship of a remote village like that under consideration to the great industrial developments in the towns; all these and other characters give such a study as that which we have attempted to make, a very special value at the present moment. And when these are combined with an investigation into the actual effect of a rise of prices such as has occurred lately in such an area, the interest becomes absorbing to any student of Indian life.

In all considerations regarding Deccan villages it must never be forgotten how far, in the past, a village has been a self-contained and self-governing unit. It supplied itself with almost all it wanted except perhaps cloth and salt, and the only payments which went outside the village or, at least, outside the local market, were for these commodities, and for the Government land revenue. In some parts of the Deccan commercial crops like cotton have been long grown, but these afford a special problem demanding special study and it was not the case in the part of the country with which we are dealing. Money rarely passed from hand to hand. Weaving was the only subsidiary industry.

This self-contained condition of things which in the old disturbed days was such a protection to a village and made it more or less independent of changes in the central government, is passing away. Lately, by the abolition of the functions of the hereditary village *kulkarni* (see page 108), and the linking up of the villages to one another by a minor Government officer (the *talati*) directly appointed, the local separateness of the village from a government point of view, has, for better or worse, been done away with. The rise of a demand for labour far from the village in the great industrial centres has again, particularly in the poorer parts of the Deccan, drawn the people into the wider general life of the province or nation. And this has been more marked in a village like that now under study than in those in more favoured regions.

The points which seem specially to come to the front in the case of this village, and which at present dominate its economy are the following:

1. The precariousness of the agricultural returns as a result of the very variable character of the rainfall in this part of the Deccan is the primary feature that must be noticed. In a sense that hardly applies anywhere else in India, the life of the people here is a 'gamble in rain.' If a good season does come, in spite of everything the people do fairly well, from their own standard. But good seasons only occur about two to four times in ten years, or nine times out of the last twenty-four, and an average year seems (if our investigations and calculations give anything like a true picture of the village life), to leave the village under-fed, more in debt than ever, and apparently less capable than ever of obtaining, with the present population and the present methods of cultivation, a real economic independence. This state of things is emphasised by the recent increase in prices.

2. As a result of this economic stress there has here been a general exit to Bombay and other large centres for

work, without those who go in any way severing their connection with the village. The usual plan, is for the people to go for from four to eight months in the year, except in a few cases when they remain permanently. We have, in fact, here a very interesting case of the industrialising of a community without the development of a landless proletariat to the extent that has been usual elsewhere. The actual advantage to the village in reducing the pressure on the land is great, but there appears to be considerable doubt as to whether it receives very much actual direct financial advantage. The amount of money sent by post is small (Rs. 450 per annum) and the people who had returned from Bombay were inclined to doubt whether they had benefited permanently very much, — though, of course, it permitted them to enjoy luxuries for the time being which are pleasant. *Only one such returned worker has bought land.*

3. Another result apparently of the unfavourable economic condition which prevails in so many Deccan villages seemed in the place we previously studied to be the general deterioration of the village and the loss of enterprise on the part of the people. In spite of the still more unfavourable conditions in Jategaon this does not seem to have happened in the present case, and we were astonished at the energy shown by the people in maintaining and improving the land on which their living depends. This is illustrated by the following features, all of recent date:—

(*a*) The wholesale introduction of improved iron ploughs.

(*b*) The existence of new wells and the desire to dig further new ones if money can anyhow be found.

(*c*) The utilisation of the *nala* water for irrigation whenever possible by annually constructing a dam and carrying water to the fields.

(*d*) The gradual increase in the area under orange cultivation in recent years.

(*e*) The annual repairs of embankments in the fields of the village intended to catch silt, and the building of new ones.

(*f*) The growing of the maximum amount of a second crop on suitable land. The amount of gram so grown in 1918-19 is the highest for thirty years.

The people, therefore, retain their enterprise in spite of the special unfavourable conditions of the past ten years, and are still ready for any improvement which promises to pay.

4. One is inclined as a result of the present study to wonder whether much of the land in the village is not used either on the margin or below the margin of profitable cultivation, and whether it would not be better to concentrate a smaller population in a smaller area of good land, and allow a large part of the stony upland to remain permanently as a source of inferior grass. The consideration of this question is, however, a very complicated one and our data are not sufficient to lead us to a very definite conclusion. The matter is really one which depends on the probability of any particular season being a good one. That probability in the last ten years has been small (20 per cent) taking the last twenty-five years it has been much greater (nearly 38 per cent).

5. The sub-division of land in this village has not reached to the same point of area as in Pimpla-Soudagar, but we are inclined to think that what we have called (see page 45) the 'effective sub-division' is equally great and equally serious. Whether we have really reached a limit below which the sub-division is not likely to go we can only conjecture. But the bulk of the holdings in Jategaon are not at present economic, even in a good year.

This can only result in debt, and the debts in the present village are enormous, and rapidly increasing.

This increase is inevitable, with the continued series of seasons which cannot possibly give a profitable return for cultivation under the present land conditions, — and we anticipate that it will go on until either there is a series of good years (as the money-lender hopes) or a large number of people have to part with their land to their financiers and leave the village. If the latter happens it will lead again to the re-consolidation of the land, and the old vicious circle will start again.

Where then can we see light as to future development and organisation of this and similar villages on new lines which will enable these difficulties to be met? We are not prepared to discuss this question just now, as the present is intended rather as a statement of fact rather than an expression of opinion. But our suspicion, formerly stated, that the dry villages in the Deccan are in a very unsatisfactory economic condition is confirmed and emphasised by the result of the present study. And, hence, it is a situation which demands the early and earnest attention of the best thought and action in the community.

APPENDIX I.

Analyses of the Water of the Vel River at Jategaon Budruk.

(See page 24)

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts.	32·00	34·00	26·00	36·00
Containing—				
Calcium carbonate	8·00	10·00	6·00	8·00
Magnesium carbonate	3·05	3·05	3·05	9·13
Sodium carbonate	1·03	—	—	—
Sodium bicarbonate	4·76	6·43	4·06	5·02
Sodium sulphate	2·46	3·69	3·69	4·88
Sodium chloride	9·24	4·62	4·62	6·93

APPENDIX II.

Analyses of the *Nala* Water at Jategaon Budruk.

(See page 25)

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	42·00	40·00	44·00	48·00
Containing—				
Calcium carbonate	6·00	8·00	10·00	8·00
Magnesium carbonate	4·58	10·68	3·05	9·13
Sodium carbonate	2·06	1·03	—	—
Sodium bicarbonate	9·80	2·38	9·66	10·23
Sodium sulphate	4·92	2·46	6·15	4·88
Sodium chloride	9·24	9·24	13·86	11·55

APPENDIX III.

Analyses of Well Water at Jategaon Budruk.

(See pages 28-29)

Well No. 1 (Survey No. 13).

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	34·00	32.00	40·00	40.00
Containing—				
Calcium carbonate	10·00	10·00	10.00	10.00
Magnesium carbonate	7·63	7·63	6·10	6.08
Sodium carbonate	1·03	—	—	—
Sodium bicarbonate	3·12	3·12	10·62	4.69
Sodium sulphate	2·46	2·46	4·92	7·32
Sodium chloride	4·62	4·62	4·62	9·24

Well No. 2 (Survey No. 15).

	8th April 1917	9th June 1917	10th Oct. 1917	Jan. 1918
	Parts per 100,000			
Total Salts	28·00	30·00	30·00	28·00
Containing—				
Calcium carbonate	10·00	12·00	10·00	16·00
Magnesium carbonate	3·05	1·44	6·10	1·71
Sodium bicarbonate	7·98	8·40	5·04	—
Sodium sulphate	1·23	2·46	2·46	—
Sodium chloride	4·62	4·62	4·62	4·62
Magnesium sulphate	—	—	—	3·70

Well No. 3 (Survey No. 17).

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	34·00	32·00	34·00	36·00
Containing—				
Calcium carbonate	12·00	10·00	10·00	16·00
Magnesium carbonate	7·63	7·63	4·58	7·61
Sodium carbonate	1·03	—	—	—
Sodium bicarbonate	1·82	5·18	8·15	1·55
Sodium sulphate	1·23	2·46	3·69	1·64
Sodium chloride	5·78	4·62	5·78	4·62

Well No. 4 (Survey No. 19) *(Kaccha.)*

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	36·00	36·00	36·00	38·00
Containing—				
Calcium carbonate	12·00	10·00	12·00	14·00
Magnesium carbonate	3·05	6.10	7·63	7·37
Sodium carbonate	—	—	—	—
Sodium bicarbonate	9.80	7·43	4·98	—
Sodium sulphate	2·46	2·46	2·46	—
Sodium chloride	4·62	4·62	4.62	6·93
Magnesium sulphate	—	—	—	4·10

Well No. 5 (Survey No. 25 (*Kaccha.*)

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	40·00	38·00	38·00	38·00
Containing—				
Calcium carbonate	6·00	8·00	10·00	4·00
Magnesium carbonate	9·16	9·34	4·58	11·17
Sodium carbonate	1·03	1·03	—	1·04
Sodium bicarbonate	7·00	4·42	8·12	6·62
Sodium sulphate	2·46	2·46	2·46	3·66
Sodium chloride	9·24	6·93	6·93	9·24

Well No. 6 (Survey No. 35) (*Kaccha.*)

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	36·00	36·00	36·00	42·00
Containing—				
Calcium carbonate	10·00	10·00	4.00	8.00
Magnesium carbonate	7·63	4·58	3.05	18·10
Sodium carbonate	—	—	—	—
Sodium bicarbonate	7·56	9·66	14.70	1·12
Sodium sulphate	1·23	2.46	4.92	2·44
Sodium chloride	6·93	6.93	6.93	9·24

Well No. 7 (Survey No. 36).

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	32·00	40·00	34·00	38·00
Containiug—				
Calcium carbonate	4·00	10·00	10·00	8·00
Magnesium carbonate	1·52	4·58	4·58	4·55
Sodium carbonate	1·03	1·57	—	—
Sodium bicarbonate	13·58	8·12	7·56	13·39
Sodium sulphate	2·46	3·69	2·46	3·66
Sodium chloride	6·93	4·62	6·93	6·93

Well No. 8 (Survey No. 36). (Near Nala.)

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	80·00	48·00	38·00	42·00
Containing—				
Calcium carbonate	12·00	6·00	4·00	10·00
Magnesium carbonate	13·64	4·58	4·58	3·04
Sodium carbonate	—	—	—	1·04
Sodium bicarbonate	17·22	11·48	18·06	12·88
Sodium sulphate	6·15	7·38	2·46	2·44
Sodium chloride	25·41	13·86	6·93	9·24

Well No. 9 (Survey No. 37).

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	36·00	40·00	40·00	44·00
Containing —				
Calcium carbonate	12·00	10·00	12·00	12·00
Magnesium carbonate	3·05	7·63	3·05	10·65
Sodium carbonate	—	—	—	0·52
Sodium bicarbonate	9·80	6·72	11·20	0·49
Sodium sulphate	2·46	7·38	3·69	8·54
Sodium chloride	5·78	6·93	4·62	6·93

Well No. 10 (Survey No. 38).

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	36·00	38·00	40·00	28·00
Containing —				
Calcium carbonate	8·00	10·00	12·00	12·00
Magnesium carbonate	4·58	10·68	4·58	4·56
Sodium carbonate	1·03	—	—	—
Sodium bicarbonate	8·54	3·64	7·98	2·80
Sodium sulphate	2·46	3·69	3·69	2·44
Sodium chloride	6·93	4·62	6·93	4·62

Well No. 11 (Survey No. 38).

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	28·00	40·00	38·00	36·00
Containing—				
Calcium carbonate	4·00	14·00	8·00	10·00
Magnesium carbonate	3·05	6·10	4·58	4·56
Sodium carbonate	1·03	—	—	—
Sodium bicarbonate	10·64	8·26	12·18	11·38
Sodium sulphate	1·23	2·46	2·46	3·66
Sodium chloride	5·78	4·62	5·78	4·62

Well No. 12 (Survey No. 42).

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	22·00	24·00	26·00	18·00
Containing—				
Calcium carbonate	4·00	6·00	6·00	4·00
Magnesium carbonate	3·05	4·58	3·05	3·04
Sodium carbonate	—	—	—	0·52
Sodium bicarbonate	6·02	4·20	10·04	4·03
Sodium sulphate	1·23	2·46	1·23	3·66
Sodium chloride	3·46	4·62	3·46	2·31

Well No. 13 (Survey No. 42).

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	40·00	44·00	48·00	40·00
Containing —				
Calcium carbonate	12·00	10·00	14·00	16·00
Magnesium carbonate	7·60	4·58	6·10	9·13
Sodium bicarbonate	7·80	12·18	7·32	5·25
Sodium sulphate	1·23	2·46	3·69	2·44
Sodium chloride	6·93	9·24	9·24	6·93

Well No. 14 (Survey No. 43).

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	50·00	32·00	36·00	42·00
Containing —				
Calcium carbonate	8·00	6·00	6·00	8·00
Magnesium carbonate	4·56	3·05	3·05	7·61
Sodium carbonate	—	1·03	—	0·52
Sodium bicarbonate	13·16	9·80	13·85	10·01
Sodium sulphate	2·46	2·46	1·23	3·66
Sodium chloride	13·86	6·93	9·24	9·24

Well No. 15 (Survey No. 63).

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	64·00	70·00	68·00	54·00
Containing—				
Calcium carbonate	8·00	6·00	8·00	4·00
Magnesium carbonate	4·56	4·56	6·10	14·10
Sodium carbonate	—	2·06	—	4·16
Sodium bicarbonate	19·60	19·60	18·90	—
Sodium sulphate	3·69	7·38	3·69	—
Sodium chloride	23·10	23·10	23·10	23·10
Magnesium sulphate	—	—	—	3·07

Well No. 16 (Survey No. 64).

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	68·00	60·00	58·00	64·00
Containing—				
Calcium carbonate	6·00	8·00	6·00	10·00
Magnesium carbonate	4·56	3·05	9·16	13·70
Sodium carbonate	—	1·03	—	—
Sodium bicarbonate	22·36	19·74	15·04	10·94
Sodium sulphate	3·69	3·69	2·46	6·10
Sodium chloride	23·10	18·48	18·48	18·48

Well No. 17 (Survey No. 95).

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	38·00	40·00	40·00	42·00
Containing—				
Calcium carbonate	8·00	12·00	12·00	14·00
Magnesium carbonate	4·56	3·05	7·63	9·13
Sodium carbonate	—	—	—	1·04
Sodium bicarbonate	10·78	7·98	5·87	2·06
Sodium sulphate	1·23	3·69	1·23	4·88
Sodium chloride	6·98	6·93	4·62	9·24

Well No. 18 (Survey No. 102).

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	44·00	44·00	44·00	44·00
Containing—				
Calcium carbonate	16·00	14·00	14·00	8·00
Magnesium carbonate	3·05	3·05	9·16	9·13
Sodium carbonate	1·03	—	—	—
Sodium bicarbonate	7·98	13·58	3·50	11·97
Sodium sulphate	2·46	2·46	2·46	1·22
Sodium chloride	9·24	6·93	6·93	9·24

Well No. 19 (Survey No. 156).

New Well.

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	38·00	36·00	36·00	38·00
Containing—				
Calcium carbonate	6·00	6·00	6·00	6·00
Magnesium carbonate	4·58	4·58	7·63	9·13
Sodium carbonate	—	—	—	—
Sodium bicarbonate	17·08	16·38	10·08	11·91
Sodium sulphate	2·46	1·23	2·46	2·44
Sodium chloride	4·62	4·62	4·62	6·23

Well No. 20 (Survey No. 156) (*Kaccha.*)

Old Well.

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	46·00	48·00	40·00	48·00
Containing—				
Calcium carbonate	10·00	10·00	12·00	8·00
Magnesium carbonate	6·15	6·10	7·63	13·70
Sodium carbonate	—	—	—	—
Sodium bicarbonate	11·48	11·49	8·30	7·42
Sodium sulphate	2·46	2·46	2·46	4·88
Sodium chloride	9·24	11·55	6·93	11·55

Well No. 21 (Survey No. 157).

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	40·00	42·00	52·00	44·00
Containing—				
Calcium carbonate	4·00	12·00	14·00	12·00
Magnesium carbonate	3·05	9·14	6·10	13·70
Sodium carbonate	2·06	1·03	—	—
Sodium bicarbonate	11·48	6·86	8·13	2·32
Sodium sulphate	2·46	3·60	6·15	3·66
Sodium chloride	11·55	6·93	13·86	9·24

Well No. 22 (Survey No. 162).

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	50·00	48·00	46·00	52·00
Containing—				
Calcium carbonate	6·00	8·00	10·00	12·00
Magnesium carbonate	3·05	7·63	4·58	7·61
Sodium carbonate	—	—	—	—
Sodium bicarbonate	20·30	11·76	13·02	10·12
Sodium sulphate	3·69	3·69	6·15	9·76
Sodium chloride	11·55	9·24	8·09	9·24

Well No. 23 (Survey No. 179).

	8th April 1917	9th June 1917	10th October 1917	Jan. 1918
	Parts per 100,000			
Total Salts	44·00	38·00	44·00	42·00
Containing				
Calcium carbonate	14·00	12·00	14·00	10·00
Magnesium carbonate	3·05	3·05	3·05	7·61
Sodium carbonate	—	—	—	—
Sodium bicarbonate	7·78	7·98	9·52	9·73
Sodium sulphate	4·92	3·69	4·92	5·54
Sodium chloride	9·24	6·93	5·78	6·93

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